



Use of Telepsychiatry in Emergency and Crisis Intervention: Current Evidence

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Abstract

Purpose of Review The aim of this review is to evaluate recent literature on the use of telepsychiatry in mental crises or emergency situations.

Recent Findings Results from recent studies which evaluated the implementation of a telepsychiatric consultation model in emergency departments point at a reduction of length of stay and a drop in admissions, increased cost-effectiveness, and improved satisfaction of patients and staff. There was almost no empirical evidence on videoconferencing in crisis intervention within the context of crisis resolution teams or online therapies. No study reporting on telepsychiatry videoconferencing in the context of disasters was found.

Summary There is still very little but increasing empirical evidence supporting the implementation of telepsychiatry in emergencies. Other mental crisis-related implementation settings remain to be researched. The implications and future research potential are discussed.

Keywords Emergency telepsychiatry · Videoconferencing · Online crisis intervention · Tele-mental health

Introduction

Telemedicine refers to the remote provision of health care through technology. Within the area of mental health and psychiatry, the term “tele-mental health” is mostly used in a broad sense, referring to mobile phone, computer, internet, and virtual reality-based applications for all kinds of mental health interventions. Such interventions have shown to be feasible and have been accepted in a wide range of settings. A recent meta-analysis supports the idea that tele-mental health applications improve a patient’s symptoms and quality of life, as well as medication adherence [1]. In our review, we refer to the term telepsychiatry and define it as a psychiatric intervention by videoconferencing [2]. Telepsychiatry can be used to provide

a variety of services, including clinical evaluations, therapy, patient education, and medication management. It is applicable in a wide range of settings and contexts and in most clinical populations [2]. A review of key telepsychiatry outcomes concluded that telepsychiatry is comparable to in-person therapy regarding the reliability of clinical assessments and treatment outcomes. A majority of studies also found it to be cost-effective and safe [3]. A recent review showed that telepsychiatry was also effectively used in non-clinical settings: Clinical effectiveness, treatment adherence, and patient satisfaction of video-to-home (VTH) and in-person delivery of psychotherapy and psychiatric consultation services were comparable to telepsychiatric methods. Moreover, VTH was more economical and was able to provide mental health care to underserved populations [4]. Despite the positive outcomes reported in empirical studies regarding the use of telepsychiatry, videoconferencing psychiatry is often limited to planned, non-emergency-related clinical consultations. There is only limited experience and empirical research of its use in crisis or emergency situations. Existing studies mainly focus on obtaining psychiatric consultations in emergency departments [5, 6].

This review defines a crisis as “a relatively sudden situation in which there is an imminent risk of harm to the self or others and judgement is impaired – a psychiatric emergency – the

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beginning, deterioration or relapse of a mental illness” (Joint Commissioning Panel for Mental Health [7]). In emergencies, decisions need to be made quickly, despite the complexity of the situation and often accompanied by uncertainty due to a lack of information. In the case of telepsychiatry, the physical distance between patients and health care providers also has to be taken into account [8]. The potential of telepsychiatry to improve the quality and extent of mental health services in emergency settings has been demonstrated for rural, remote, and isolated populations [9]. Emergency telepsychiatry can be of major importance in different contexts: it has the capability to reduce emergency department overcrowding, provide much needed care in rural areas, and improve access to mental health care in the event of a natural or manmade disaster [10••]. Emergency management guidelines that entail recommendations related to administrative, legal, ethical, and clinical issues in emergency telepsychiatry were published several years ago [9]. Emergency telepsychiatry has been proven to be safe, effective, and satisfactory for patients and emergency health care staff [9, 10••]. There has been only little empirical research on the use of emergency telepsychiatry or the use of telepsychiatry in crisis intervention. Low patient numbers and methodological shortcomings often limit these studies. The aim of our review is to evaluate the literature of the last 5 years on the use of telepsychiatry in crisis or emergency interventions.

Methods

Data Source

We searched PubMed, PsycInfo, and Medline for peer-reviewed original research studies and other published reports on any psychiatric online crisis or emergency intervention published within the last 5 years (January 2014–January 2019). The following search terms were used: “telepsychiatry,” “tele-mental health,” “videoconferencing,” and “teleconsultation” in combination with “emergency,” “crisis intervention,” “acute,” “suicide prevention,” “crisis management,” or “disaster mental health assistance.” We also reviewed the reference section of each included study to identify other potential studies.

Study Selection

We included all outcome studies targeting adults and children with any mental health condition who were treated via telepsychiatry as defined above in an emergency department setting or crisis situation. Also included are outcome studies set in emergency departments (EDs), in treatment by crisis resolution teams or via online therapies for patients with severe mental illness (SMI), or in post-disaster contexts. If no studies were available in the abovementioned timeframe or if

an implementation model was described in detail earlier, reference was also made to older publications. We did not limit our selection to randomized controlled trials but included quantitative and qualitative studies or report findings based on empirical data. All included studies were published in English.

Results

Emergency Telepsychiatry in Emergency Department Settings

Psychiatric emergencies are mostly dealt with in non-specialized EDs (11% of all ED cases), and there has been a steady increase in mental health-related ED visits in the last years [11•]. Letvag and Rhew reported a lack of specialized EDs in the USA: In 2015 in total, 4000 general EDs and only 146 psychiatric EDs existed (American Hospital Association [12]). Many ED providers reported that they were not able to adequately manage patients in need of psychiatric consultation and that access to mental health treatment consultations was extremely limited [11•]. The overcrowding of non-specialized emergency departments and the lack of direct access to psychiatric emergency care may have promoted the development of referral models to telepsychiatric emergencies within the last years. A data analysis of the National Emergency Department Inventory – New England Survey (US) of 195 emergency departments revealed that 49% of the emergency departments used telemedicine [13]. The analysis of the ED data showed that the use of telemedicine was more likely to occur in rural emergency departments and in larger emergency departments. We were able to identify 15 empirical studies reporting on the effects of the use of telepsychiatry in emergency department settings during our research throughout the different databases using the abovementioned keywords. Three studies were performed in pediatric settings and five studies had a focus on qualitative methods.

Validity of Assessment and Treatment via Telepsychiatry in Emergency Department Settings

Two studies support the validity of assessment and treatment via telepsychiatry in emergency contexts: Seidel and Kilgus compared psychiatrists’ evaluations of 73 ED mental health patients made face-to-face or by telemedicine in Virginia (USA) [14••]. The authors did not find any significant difference related to disposition recommendation to discharge or hospitalize the patient, the strength of this recommendation, or diagnosis on a dangerousness scale between the two groups. Roberts et al. conducted a 12-month prospective study and compared face-to-face with telepsychiatry emergency

treatment of 60 pediatric patients in Ontario, Canada [15•]. The authors reported no statistically significant difference between the groups regarding clinical outcomes as well as a high degree of satisfaction with telepsychiatry.

Outcomes of Implementation

We found six empirical studies reporting on different outcomes after the implementation of a telepsychiatric consultation in emergency departments: Narasimhan et al. (2015) evaluated the implementation of a statewide telepsychiatry program (SC, USA), which was implemented in 2009 in 18 non-psychiatric rural and urban emergency departments in a control group design [16•]. The authors reported a decrease of the length of stay from 1.35 to 0.43 days, a drop in admissions from 22 to 11%, and a rise of follow-up rates of 46 from 16% compared with matched controls. Southard and colleagues conducted a study evaluating hospital charts retrospectively in a pre-post design ($n = 24$ patients) [17]. After implementation of telepsychiatry in an ED in Indiana (USA), a significant reduction in time to treatment, length of stay, and door-to-door consult time was observed. Reliford and Adebajo examined the effects of telepsychiatry consultations in a pediatric emergency department in New York (USA) in a pre-post design ($n = 35$) [18]. Results showed a decrease of the length of stay for non-hospitalized patients (compared with the months prior without telepsychiatry consultation) and a decrease of time investment for clinicians due to reduced travel time. In a similar pre-post design in five emergency departments in Colorado (USA), Thomas et al. analyzed 494 pediatric records [19]. The authors reported a reduction of the median length of stay in the emergency departments, lower costs per patient, improved physician and patient caregiver satisfaction, and no safety concerns (based on the number of readmissions) in the 72 h following a telepsychiatric emergency consultation. The Australian Mental Health Emergency Care-Rural Access Program (MHEC-RAP) was developed to improve access to specialist emergency mental health care to rural and remote communities. Mental health nurses are used to assess and triage patients. The program has been implemented in 46 EDs. The program (after an increase of admission rates during the first years) helped to decrease the admission rates of the patients admitted to local hospitals by 28% [20•]. Another Australian study by Donley and coworkers [21] reported about the implementation of a telepsychiatric emergency intervention. In total, 44 questionnaires were filled out by patients ($n = 10$), medical staff ($n = 8$), and clinicians ($n = 28$), demonstrating a high satisfaction rate, especially among clinicians. Additionally, a comparison between telepsychiatry versus face-to-face presentations at different time points (e.g., at first presentation, referral or discharge) revealed time reductions when telepsychiatry was used (in total 4 h per patient).

Qualitative Studies Exploring the Views of Staff and Patients Regarding Emergency Telepsychiatry

Six studies used qualitative methods to focus on the views of staff and/or patients regarding the implementation of a telepsychiatric consultation in ED settings: Saurman and co-workers conducted semi-structured interviews with emergency department providers ($n = 12$). The professionals from the Australian MHEC-RAP reported an increased confidence to manage and care for emergency mental health care patients locally and a change in their clinical perspective due to the telepsychiatry consultations [22]. The University of North Norway introduced a telepsychiatry program in 2011, which connects remote regional psychiatric centers and homes of participating psychiatrists in a 24/7 on-call service [23]. The authors conducted 29 semi-structured interviews with patients ($n = 5$), psychiatrists ($n = 5$), and nurses ($n = 19$) [8, 24•, 25•]: Content analyses revealed improved confidence of professionals and examined how videoconferencing had an effect on patient involvement and professional practice. Four beneficial aspects of telepsychiatry in emergency settings were identified: the immediacy of assessment, an increased transparency of the assessment, a sense of access to the “real” expert, and a fostering of the patient’s voice. The authors defined situations in which videoconferencing (compared with telephone calls) was helpful: in the case of uncertainty regarding the degree of illness, when clarification of the severity of the patients’ mental health condition was needed, for building an alliance with patients, and in situations of disagreement between health personnel or between patients and health personnel. Pangka et al. performed semi-structured telephone interviews to explore the views of emergency department staff ($n = 17$) on telepsychiatry in 18 emergency departments in Ontario (Canada) [26], of which 12 EDs already used telepsychiatry. The professionals reported a positive feedback from patients and found it useful to connect with off-site mental health specialists. As a disadvantage, the additional strains on nurses’ duties, a lack of routine, and difficulties of accessing a psychiatrist were mentioned. The Oxford Health NHS Foundation Trust (UK) recently presented a project report [27] regarding the implementation of telepsychiatry into routine practice in an ED psychiatric service in a 3-month period ($n = 103$ referrals from local EDs). Surveys of mental health staff ($n = 66$), emergency department staff ($n = 36$), and patients ($n = 51$) were undertaken. Professionals and patients mentioned initial skepticism regarding the therapeutic relationship and concerns on how to manage certain patients via telepsychiatry. Feedback questionnaires after telepsychiatry sessions indicated that concerns were overcome. The authors report on positive staff and patients’ feedback as well as savings in costs (travel time) and clinicians’ time. Other implementation challenges mentioned in the report included mostly organizational and technical aspects. Meyer and colleagues

proposed a model for a stepwise implementation of a regional telepsychiatric emergency service for 21 emergency departments within the framework of an already-existing acute telemedicine program [11•]. This model was based on preceding needs assessment, an online survey of emergency room providers, and a review of recent site date and site visits.

Use of Telepsychiatry in Crisis Resolution Teams or Crisis Support

Crisis resolution teams (CRTs) aim to provide an alternative to hospitalization in times of mental health crises, by enabling rapid assessment and home treatment and facilitating early discharge from hospitals [28]. In a systematic meta-analysis including 69 studies, the authors reported that longer opening hours and the presence of a psychiatrist in the team could increase the ability of CRTs to prevent hospital admissions. Both components could be managed more easily by (emergency) telepsychiatry. Crisis support services, which in the past were mostly used by telephone via hotlines and other methods such as internet chat and text messaging, are increasingly being used [29]. Evaluations of the use and effects of text and chat services in crisis communication showed promising results [30]. One advantage of an additional chat service may be anonymity. There are a few examples of how telepsychiatry can support crisis resolution, but empirical evidence is lacking. We did not find any empirical studies using telepsychiatry in this research area.

We therefore briefly report on two examples that we found during an online search. Burke Center MHEC in Texas (<https://myburke.org/about/annual-report-fy2017/>), founded in 2008, was the first freestanding rural comprehensive emergency program in which psychiatric services were performed entirely by emergency telepsychiatrists. Since this new crisis resolution structure was in place, there was no need for mental health patients to pass through local emergency departments, and the utilization of state hospitals was reduced by 32% [31]. The crisis resolution and home treatment team, based at the Woodlands Centre for Acute Care in Hastings (UK), is part of the Sussex Partnership NHS Foundation Trust and offers support and intensive treatment to people in their own home to help them in their recovery and to avoid them being admitted to hospitals. A mental health crisis team in East Sussex (<https://www.sussexpartnership.nhs.uk/whats-new/telepsychiatry-innovative-technology-help-people-mental-health-conditions-their-recovery>) is piloting a new system, which offers online video calls to patients so they can keep in touch from home or a place that is convenient to them.

An individual case study reported on the successful use of telepsychiatric counseling for a seaman with suicidal thoughts [32].

Use of Crisis Telepsychiatry in Online Therapies for Patients With Severe Mental Illness

Several studies using telehealth interventions reported on psychological online treatments in PTSD or other crisis contexts. In their meta-analysis, which included 41 studies using teletherapy for the treatment of PTSD in veterans, Turgoose and coworkers found similar symptom reductions compared with personal interventions and consider tele-therapy as a viable alternative to face-to-face treatment [33]. In a recent meta-analysis reviewing the application and effectiveness of telehealth for patients with severe mental illness (SMI), information transfer via websites, cognitive training via computer, hand-held devices, telephone calls, or virtual reality applications were used to support the therapy outcomes [34•, 35]. Most internet-based (psychological) therapy programs exclude people with suicidal ideation (e.g. [36].) or refer patients with imminent suicidal thoughts (like the MindSpot Clinic in Australia [37]) and often focus on stopping treatment and/or hospitalization in case of risk of suicide. A study by Hulsbosch and colleagues used videoconferencing in addition to regular treatment in patients with SMI in a randomized controlled trial [38]. Risk of suicide was not an exclusion criterion in this study, and video communication was available on a 24/7 basis for patients. The study showed a positive effect of the additional videoconferencing on patients' satisfaction, but videoconferencing was used less often than expected. Moreover, patients had to wait for 2 months for installation of their videoconferencing unit, which may put the study into perspective, apart from an acute crisis context. A qualitative study by Gilmore and Ward-Ciesielski focused on the view of licensed mental health providers ($n = 52$) on the risks associated with using telemedicine with patients who were at high risk of suicide [39••]. The main concerns were about the quality of assessment via telemedicine (mentioned by 33%), a lack of control over patients (mentioned by 31%), and difficulties to arrange the triaging process with the patient when needed (mentioned by 17%). Moreover, providers with a positive attitude towards telemedicine, with younger age, and with more years in clinical practice were more likely to use telepsychiatry for patients with a high risk for suicide.

Telepsychiatry in Emergency Situations Due to Natural or Manmade Catastrophes

An overview of the development of telemedicine use over the past decades in the context of natural or manmade disasters showed an increasing use of telemedicine [40]. The American Telemedicine Association Emergency Preparedness and Response Special Interest Group published a white paper [41], which contains an Inventory of Telehealth Resources for Rapid and Effective Emergency Medical Care.

Telepsychiatry is becoming more and more part of routine medical emergency planning and can help to create a safety net until the care system is rebuilt [10••]. A quick access to psychiatric care after disaster is crucial given the high rates of PTSD and depression. Empirical studies reporting the use of telemedicine and telepsychiatry in emergencies are very limited [42]. A project report by Delaigue et al. [43] described the results of 7 years of telemedicine service in the non-governmental organization Medecins Sans Frontiers (Doctors Without Borders), where field medical staff was provided direct access to specialist advice for multispecialty care worldwide. The authors reported that during the implementation process, several technical, operational, and cultural barriers needed to be overcome. However, telepsychiatry was not mentioned in that report. In a meta-analysis of tele-mental health in international and post-disaster settings, which included studies until 2013 [44], the authors reported that telemedicine and tele-mental health remained underutilized. They stated that one of the most effective uses of tele-mental health in post-disaster settings was in support of distant colleagues for education, training, supervision, and case consultations. For international tele-mental health, a “secure-and-forward” technology is often used instead of videoconferencing. This term is used to describe an asynchronous means of communication for transmitting clinical material and educational responses and allows to consider time zone differences worldwide and circumvents technical limitations (connectivity problems) [45, 44]. Jefe-Baboul and coworkers reported a single case study from Syria where tele-mental health supervision and training was helpful [44].

Refugees have a higher risk of mental disorders, but only few have access to mental health care treatment [46]. Despite the lack of studies, telepsychiatry appears to be a cost-effective and clinically effective approach to care for persons suffering from PTSD in Syria and provide them access to treatment of trauma-related disorders [47]. Jefe-Bahloul conducted a pilot study to look for the openness of Syrian refugees suffering from PTSD regarding telepsychiatry [48]. Thirty-four percent of respondents ($n = 354$) reported a perceived need to see a psychiatrist. Among them, 45% were open to receive care via telepsychiatry. The authors emphasized that more studies were required to understand the cultural and social barriers limiting the use of telepsychiatry care in these regions. Qadir and coworkers conducted an online intervention in northern Pakistan after several natural disasters [49]. Community members received intense training sessions as mental health workers to screen adults for depression, anxiety, and PTSD. Out of 500 adults, who were screened, about 10% were diagnosed with symptoms of anxiety or PTSD. They received a weekly telepsychiatry session with a trained psychiatrist. Other studies reported on mental health interventions for refugees using smartphone-based interventions (called mobile health or “mhealth”). Burchert and coworkers

performed qualitative interviews ($n = 128$) among Syrian refugees in Europe to identify usage, access, and potential barriers for using a modularized smartphone-based intervention for refugees which was developed by the World Health Organization (WHO) [50]. In addition to technical literacy and internet access problems as commonly known barriers, the authors identified other barriers related to visual components of the app and the length and pace of the intervention sessions. The authors stressed the importance of “contextual adaptations” of mobile mental health applications in general. In a review by Ruzek and colleagues [51], the authors reported on the widespread use of mobile mental health interventions following war and disaster. The PTSD coach is a mobile app for trauma survivors with PTSD symptoms, which intends to provide psychoeducation and self-management tools. It was developed in 2011 by the U.S. Veterans Affairs National Center and has been successfully evaluated (e.g. [52]). It has been downloaded over 243,000 times. However, there is little empirical evidence to date, especially regarding the active components of mobile mental health care. E-mental health care has shown to be a promising option for scaling up mental health care for refugees [53]. Knaevelsrud and coworkers provided evidence for the efficacy of an internet-based intervention translated into Arabic for people with post-traumatic stress disorder, mainly in Iraq, in a randomized controlled study compared with a waiting control group [54].

Lessons Learned and Future Directions

The studies identified in our systematic review suggest that the evidence base for telepsychiatry in emergency departments for adult and pediatric populations is small but growing. The main results are as follows: (1) the validity of assessments and clinical interaction via telepsychiatry was comparable to that in face-to-face care; (2) the use of telepsychiatry was correlated with a reduction of the length of stay and a reduction of the numbers of hospital admissions; (3) telepsychiatry seems to be cost-effective; (4) patients and professionals have a positive attitude towards the technology and show a high level of satisfaction with telepsychiatry. In a review published in 2015, the use of telepsychiatry in acute settings appeared to be useful in regions where access to emergency services was difficult [55•]. Several large hospital systems in the USA also reported improved quality of care through ED telepsychiatry. Videoconferencing is often used as a tool to establish a decentralized 24/7 health service for psychiatric emergencies and requires an essential organizational change. A limiting factor of these findings is the methodological quality of the studies, mostly using a pre-post design without control groups (with few notable exceptions like Narasimhan and colleagues [16••]). Thus, further controlled studies with larger patient numbers and longer observation periods are needed. We also

identified a number of qualitative studies with a major focus on professionals' and patients' view on telepsychiatry use in emergency situations. These studies showed that videoconferencing may improve the confidence of psychiatrists, nurses, and patients in using telepsychiatry in psychiatric emergencies. When videoconferencing was used for psychiatric emergencies, patients became more involved in decision-making because of direct contact with the psychiatrist [8]. Qualitative studies can also inform about important barriers for implementation. Further studies are needed to identify the key barriers to implementation. We were unable to identify any empirical evidence for implementation of telepsychiatry intervention in different crisis settings or in patients with severe mental illness. Psychological online therapies often excluded severe cases with risk of suicide or referred these patients to clinics or emergency departments, but this was not a central aspect of our study and we were unable to review the many online interventions, which are currently available for their proceedings in cases of suicidality. Clearly, a separate review would be warranted to address this issue. In disaster settings, a "secure-and-forward" technology is often used instead of videoconferencing, mostly for education, training, and case consultations. In the context of online intervention for refugees, mobile mental health has shown promising results.

Conclusions

This review on the use of telepsychiatry in crisis intervention shows that emergency telepsychiatry is frequently used. It has the potential to reduce waiting times and length of stay, to reduce hospital admission rates, to become cost-effective, to relieve strain on staff working hours, and to improve access to mental health care in mental crises. The results from qualitative studies are an important complement to the quantitative studies discussed in this review. All studies showed a high degree of acceptance and satisfaction towards the use of telepsychiatry in emergency situations by professionals and patients, but the review also revealed implementation challenges. The empirical evidence supporting the implementation of telepsychiatric consultations into general ED settings is growing. In some countries (e.g., the USA, Canada, Australia, The Netherlands, and Norway), depending on the legal and financial conditions, telepsychiatry has already become an integral part of the routine health care system. Telepsychiatry is mostly used in emergency department settings. Expanding telepsychiatry beyond this setting already started in planned settings of telepsychiatry (e.g., video-to-home setting [56••]) but has not yet reached the emergency setting. Technical limitations may be one reason, but qualitative studies indicate that there may be additional barriers on the organizational and personal level, which would warrant further systematic studies. Other future developments could

encompass crisis centers or services with facultative telepsychiatric services provided by psychiatrists and in supporting the collaboration of crisis centers and emergency departments [57]. Successful implementation strategies to integrate emergency telepsychiatry into diverse settings and models of health care are needed [58]. Therefore, empirical research on the best use and setting conditions is needed, technical limitations have to be overcome, and crisis staff needs to be trained in using these technologies. Hoffman and Kane [59] surveyed 183 residency programs in the USA and found less than half of the programs (46%) were involving telepsychiatry through either formal curriculum or informal exposure.

Our study is limited by its narrative character, although we searched the literature systematically. It is also limited by referring only to studies published in English. From the published studies, it is difficult to assess how much more clinical and societal benefits could be achieved by implementing more emergency telepsychiatry services in different mental health care systems. However, the studies clearly show that emergency telepsychiatry is feasible and safe and shows promising beneficial effects on symptoms and health care service utilization patterns. To advance the field of emergency telepsychiatry, further controlled clinical trials are warranted to broaden the evidence base on clinical efficacy, cost-effectiveness, and implementation strategies.

Compliance with Ethical Standards

Conflict of Interest Isabelle Reinhardt and Euphrosyne Gouzoulis-Mayfrank each declare no potential conflicts of interest.

Jürgen Zielasek has received travel support and attendance fee waiver for attending the annual conference as a member of the scientific board of the annual congress from the German Association for Psychiatry, Psychotherapy and Psychosomatics.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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