



A Rapid Ethnographic Assessment of the Impact of the COVID-19 Pandemic on Mental Health Services Delivery in an Acute Care Medical Emergency Department and Trauma Center

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Abstract

A rapid ethnographic assessment of delivery of mental health services to patients at a Level I trauma center in a major metropolitan hospital undergoing a COVID-19 surge was conducted to assess the challenges involved in services delivery and to compare the experience of delivering services across time. Study participants were patients and providers who interacted with or otherwise were observed by three clinicians engaged in the delivery of care within the Emergency Department (ED) and Trauma Center at Harborview Medical Center from the COVID-19-related “surge” in April to the end of July 2020. Data were collected and analyzed in accordance with the Rapid Assessment Procedures-Informed Clinical Ethnography (RAPICE) protocol. Community and institutional efforts to control the spread of the coronavirus created several challenges to providing mental health services in an acute care setting during the April surge. Most of these challenges were successfully addressed by standardization of infection control protocols, but new challenges emerged including an increase in expenses for infection control and reduction in clinical revenues due to fewer patients, furloughs of mental health services providers and peer specialists in the ED, services not provided or delayed, increased stress due to fear of furloughs or increased workload of those not furloughed, and increases in patients seen with injuries due to risky behavior, violence, and substance use. These findings illustrate the rapidly shifting nature of the pandemic, its impacts on mental health services, and the mitigation efforts of communities and healthcare systems.

Keywords Mental health services · Trauma care · Ethnography · Rapid assessment · COVID-19

Introduction

Each year in the US, over 40 million individuals present to acute care medical emergency department (ED) settings for the treatment of traumatic physical injury (National Center

for Health Statistics, 2017), and approximately 2.9 million individuals are admitted to trauma centers (TCs) after incurring both intentional (e.g., gunshots, stabbings, physical assaults) and unintentional (natural disasters, motor vehicle crashes) injury events (CDC, 2020). Highly prevalent psychiatric comorbidities include enduring posttraumatic stress disorder (PTSD), depression, and associated suicidal ideation, alcohol, and drug use problems (Bryant et al., 2010; Holbrook et al., 1999; Shih et al., 2010; Zatzick et al., 2007). Problems like depression and substance use increases vulnerability to trauma (Cameron et al., 2006; O’Donnell et al., 2009; Patten et al., 2010), while trauma increases vulnerability to problems like PTSD (Bryant et al., 2010; Shih et al., 2010; Stein et al., 2019; Zatzick et al., 2007). For these reasons, delivery of mental health services to trauma survivors is critical.

In the general population, the prevalence of mental health problems reportedly increased as a result of the COVID-19 pandemic (Czeisler et al., 2020; Ettman et al., 2020;

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Gallagher et al., 2020; Hologue et al., 2020; Jia et al., 2020; Li et al., 2020; Pfefferbaum & North, 2020). The increased risk has been attributed to several factors, including economic losses and unemployment (Hologue et al., 2020; Li et al., 2020), fear of infection (Ettman et al., 2020; Gallagher et al., 2020; Jia et al., 2020), and isolation and confinement (Ettman et al., 2020). Such stressors are likely to contribute to a rise of intentional injuries (Lange et al., 2020).

Several studies have been conducted on the mental health impacts of the COVID-19 and other infectious disease pandemics on the mental health of health care providers working in emergency department and other clinical settings (Bai et al., 2004; Barello et al., 2020; Chen et al., 2020; Lai et al., 2020; Lin et al., 2007; Shanafelt et al., 2020). However, to date, there has been no study of the impact of the COVID-19 pandemic on the delivery of mental health services in EDs or TCs. Moreover, due to the rapidly evolving nature of the pandemic and its impact on healthcare, barriers to delivering such services are likely to change over time. To address this lack of information, we conducted a rapid ethnographic assessment of the challenges involved in delivering mental health services to patients admitted for care in a Level I trauma center in a major metropolitan hospital undergoing a COVID-19 surge to determine if there had been any change in these challenges and the means used to address them across time (between April and July 2020).

Methods

Design Overview

The investigation reported here was embedded within a larger randomized comparative effectiveness trial of a peer-integrated acute care to primary care and community care coordination intervention (Scheuer et al., 2020). The goal of the larger, mixed-methods investigation is to develop and implement optimal peer-integrated collaborative care interventions for injured trauma survivors treated in US trauma care systems. The study includes quantitative measures to assess the mental and physical health impacts of injury, such as emergency department health service utilization, severity of patient concerns, posttraumatic stress disorder symptoms, and physical limitations. Qualitative measures include patient self-reported concern narratives. Additionally, the study uses the Rapid Assessment Procedure-Informed Clinical Ethnography (RAPICE) approach to assess implementation processes. RAPICE embeds participant observation within front-line study team members engaged in rolling-out clinical trial procedures, combined with regular data review/analyses with an implementation science mixed methods expert consultant (Palinkas & Zatzick, 2019).

Although the parent study was designed as a mixed methods study, the study reported in this manuscript was intended to be a qualitative study only because study investigators remained obligated to perform their clinical duties and thus were able to continue as participant observers at the study site and collect information on trauma center processes and activities that extended beyond the scope of the parent study. In the study reported here, RAPICE was utilized because the research team had already been trained in its use and had collected ethnographic data at the trauma center in the parent study prior to the COVID-19 outbreak (Palinkas et al., 2020). RAPICE was also previously utilized to describe the impact on of the COVID-19 pandemic on trauma care services in general (Palinkas et al., 2020) and the ethical tensions and coping strategies in the early days and weeks of the pandemic at the Trauma Center of Harborview Medical Center in Seattle WA (Moloney et al., 2020). The facility is the only designated Level I trauma and burn center in Washington state and is the regional trauma and burn referral center for Alaska, Montana, and Idaho. Seattle was also one of the first urban areas in the United States to experience a surge of COVID-19 cases in April 2020.

Participants

Study participants were patients and providers who interacted with or otherwise were observed by three ethnographically trained clinicians engaged in the delivery of care within the Trauma Center. Research team members included an ED physician, acute care medical consultation-liaison psychiatrist, and social worker, each of whom served as participant observers (POs) in the trauma center. Each team member had an opportunity to observe various components of acute care delivery, from triage management and emergency care to surgical procedures, in-hospital mental health service delivery, and trauma center to primary care linkages. POs were trained in the principles and practice of RAPICE, what information to collect and how, (i.e., through observation and informal interviews with other providers and staff), how to record information collected in field jottings and field notes, and how to acknowledge and manage the researcher's subjectivity through reflexivity, or systematic awareness of the potential for bias and distortion (Padgett, 2017).

Compliance with Ethical Standards

POs were tasked with observing and recording events that illustrated the impacts of the pandemic on provider performance and well-being and on provider interactions with patients, family members and other providers. Providers and staff at the study site had previously been informed of the investigators' role as POs in the parent study. All study procedures were approved by the IRBs of the University of

Washington and University of Southern California prior to the initiation of the investigation. Informed consent from the participant observers themselves was obtained from the first author.

Data Collection

Information on these observations and interactions were recorded through periodic jottings summarizing observations and interactions and more detailed field notes that could be updated electronically as encrypted files on a laptop computer each day. Observations and conversations with others were deidentified to protect their anonymity and privacy. Each PO then participated in an individual semi-structured debriefing interview with the first author to clarify and expand upon information contained in jottings and field notes and provide a preliminary interpretation of their observations and interactions. Debriefs lasting between 50 and 60 min in duration were conducted using the Zoom video conferencing platform, recorded, and transcribed for analysis. Written transcripts of debriefs were then provided to the POs, enabling them to revise or elaborate on comments made.

Data Analysis

The first author reviewed all data collected by the POs, and performed a preliminary analysis, using the immersions/crystallization (Miller & Crabtree, 1992) and focused thematic analysis techniques (Saldana, 2016) that are part of the RAPICE methodology (Palinkas & Zatzick, 2019). The first author then queried each PO during the debrief to gain more insight into the data and its context and to obtain a preliminary interpretation of the meaning and significance of data provided by each PO and to resolve conflicting observations and interpretations through investigator triangulation (Patton, 2002). Field notes, jottings, memos, documents and transcripts of the member-checking debriefing interviews were then coded by the first author. Codes were reviewed by POs to insure consistency and consensus. QSR NVivo 12 was used to generate a series of themes arranged in a treelike structure connecting text segments grouped into separate categories of codes or “nodes.” Consistent with previously explicated RAPICE methods (Palinkas & Zatzick, 2019), a discussion then ensued until both the POs and the first author reached consensus as to the meaning and significance of the data. Finally, a template approach (Crabtree & Miller, 1992) was used to compare themes collected at baseline (April 2020) and follow-up (July 2020) to identify potential changes in problems addressed and services provided by mental health professionals in this setting.

Results

The crystallization and focused analyses both revealed two primary themes: initial challenges in delivering mental health services and changes in delivery over the time period during which the study was conducted. Within each primary theme, there were two subthemes: demand for and supply of services. Figure 1 illustrates the connections between determinants and outcomes of mental health services delivery demand and supply during the pandemic.

Theme 1: Initial Challenges to Delivering Mental Health Services

There are four service units tasked with delivering mental health services to trauma patients: (1) inpatient/consultation psychiatry, (2) rehabilitation psychology, (3) addiction services, and (4) social work. All four service units reported some challenges that were similar to those faced in other units and some challenges that were unique to each unit. However, all four units experienced an increase in need (demand) for services among patients presenting at the trauma center and ED, and a decrease in access to or availability of services (supply).

Increased Need for Services

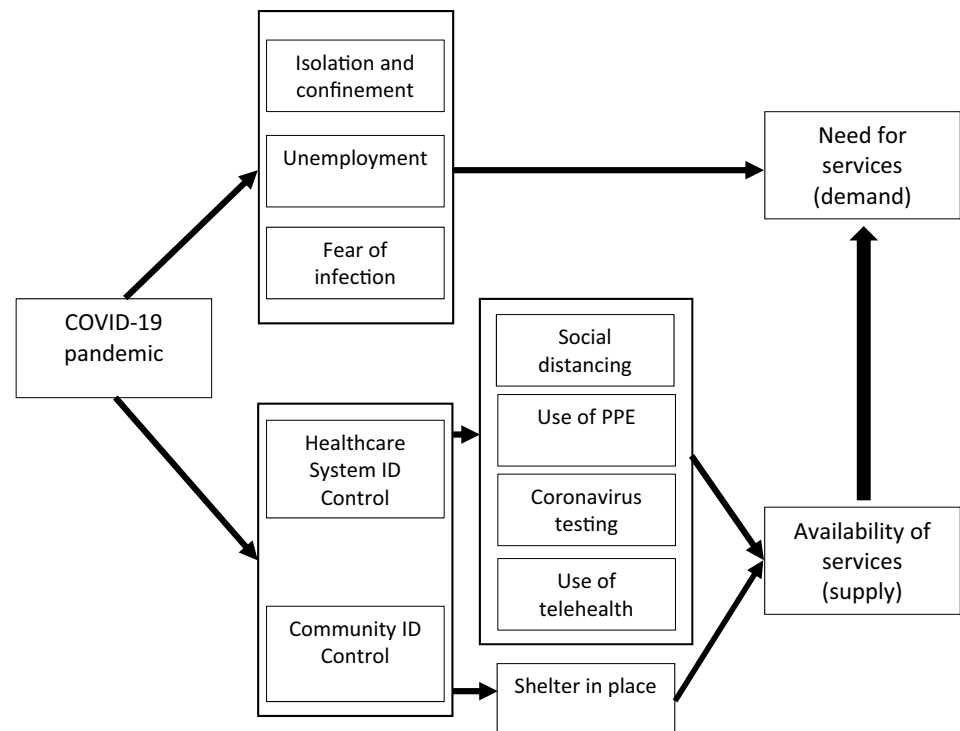
The POs reported potential risks to patients associated with living in isolation and confinement due to shelter in place orders that exacerbated levels of stress and symptoms of depression, anxiety, and substance use, especially among those living alone. These symptoms, in turn, were attributed to a perceived increase in nonaccidental trauma:

Awful nonaccidental trauma [NAT] and another patient who tried to commit suicide. Seems these types of trauma are up lately. Must be awful if you live alone to be socially isolating. Lots of conversations about whether more NAT/suicides are actually happening as a result of the COVID pandemic. Makes you wonder about child abuse etc. (fieldnotes).

Such patients encountered numerous challenges in adhering to provider recommendations, especially when such recommendations had previously included techniques such as behavioral activation, which required patients to spend time outdoors engaging in physical activity or socializing with others.

Patient reports he is very depressed (his symptoms have not improved almost at all since we first started working together). I am very concerned with this patient and am trying my best to work with him to

Fig. 1 Conceptual framework of COVID-19 pandemic and its impact on supply and demand for mental and behavioral health services



increase engagement with family and friends and do things that bring him joy. The mode that patient reports has been the most helpful over his many years of therapy has been behavioral activation, so that's what we've been focusing on. This is really hard now, since he should not be going outside given his condition. Pretty heartbreaking circumstances – I feel like he's getting burned on both ends (fieldnotes).

Providers in the unit also expressed concern that mental and behavior health problems of some patients might also become more severe because of medical center limitations to in-person care or as a result of patient reluctance to come to medical center for prescription refills or appointments due to concerns about becoming infected with the coronavirus.

Third patient: 20-year-old undocumented Latino cisgender male has been living with boyfriend for approximately 1 month. His depression and anxiety have been in remission for 3 months, but symptoms have resurfaced after being off meds for a week and a half (due to afraid of getting his medication which he typically picks up at [hospital]) and recently laid off from restaurant position (fieldnotes).

Decreased Access to and Availability of Services

In consultation/inpatient psychiatry, the study POs and other clinical staff noted challenges associated with social distancing and the limitations it placed on interacting and

conducting assessments with patients. In many instances, social distancing was not possible. As one psychiatrist observed, “the psych units are smaller and impossible to social distance” (jottings). The limitation only contributed to increased levels of anxiety among providers over the possibility of being infected by the coronavirus. This concern was illustrated in the following by the PO on the consultation service: “And I felt like being pretty cautious because I had been on the psych units, that's, that could be like 20, 25 patients all at once you know, if anyone of them has it, and then I can. I disseminated in a sense to others, so, but lots of other people were talking about that, especially in the psychiatry consults, yeah” (debriefing interview).

Another set of challenges experienced in this unit was linked to the wearing of personal protective equipment (PPE). In April, hospital staff were initially advised but not required to wear face masks. One participant commented in April that he would often encounter patients and providers not wearing masks. As with social distancing, the increased levels of anxiety among providers over the possibility of being infected by the coronavirus created barriers to interacting with patients that were not evident before the pandemic: “Provider tried to stand at the door of the room, but it was virtually impossible to maintain a six-foot distance from their patients and nursing staff. It just wasn't happening. At the same time, none of the patients had masks. None of the nurses had masks” (jottings).

Another challenge was the transition to online services. As reported by one of the POs, one of the limitations to

virtual services was the lack of time to conduct clinical assessments: “It is difficult to get the scoring of measures because that used to happen before clinic visits (during front desk check in) and now I have to either do it over the phone (which is time consuming and could lead to less therapeutic work) or send a questionnaire through eCare, which the patient doesn’t have” (fieldnotes). The following quote in the fieldnotes of the same PO also illustrated the challenges involved in using the technology:

However, due to University policy, I was barred from on-site work for the remainder of the academic year. I therefore began to conduct all of my work remotely, which was a novel method of care for the program. I was the first person in the 9 + years of the clinic to transition solely to remote work with patients. This came with novel challenges; engagement entirely over the phone has been challenging in ways I did not expect, and there have been many technological difficulties and departmental miscommunications.

Providers also reported patient unwillingness to participate in telehealth sessions or difficulty with accessing virtual meetings due to lack of access to technology, unfamiliarity with procedures for connecting on platforms like Zoom, and difficulty maintaining focus in such meetings. According to one PO, “a lot of our patients have difficulty even just keeping a cellphone, period, and having adequate WIFI or you know 5G or whatever” (debriefing interview). For other patients, “there’s some people who have simply who have just stated ‘I’m not a phone person’, and that has been challenging to continuously engage those folks. There’s some that actually refuse to move into that, to that method of contact” (debriefing interview).

He messaged back that like, that you know “it’s not best for me, let’s just wait until all this blows over”, and at the time I thought, “maybe it might blow over” so I was kind of like “okay sure”. This was early March, and then I realized it wasn’t going to blow over at all, because it was announced that I wasn’t going to go over to clinic for the remainder of my program, so I e-care messaged him again to say, you know, “hey this isn’t ending anytime soon, but I really, really would love to talk to you and he just hasn’t gotten back in touch, so it is very clear to me that that is something, for whatever reason something that he is not willing to do and now is completely unengaged in care, and I probably won’t be seeing him because I’ve sent two messages and he hasn’t replied back, so you know, that’s a shame. So that’s something I’ve noticed (debriefing interview).

Given these limitations, it was felt that many are not getting the care they need.

The PO based in the ED reported limited resources to provide psychology and addiction services in the ED setting, including no in-person counseling with peer specialists, an inability to send patients with drug problems to detox, and limited access to community services. Because of limited resources and the implementation of protocols requiring patients to be tested before admission, some patients with mental health problems experienced delays in receiving mental health services.

Next patient comes in by ambulance with a mask on, yelling loudly, writhing on the stretcher. She is placed in a room. She comes with paperwork from SPD [Seattle Police Department] that she as being inappropriate in public and found outside a closed shop yelling. She can’t answer the COVID screening questions and looks like she will eventually need to see psychiatry (likely acutely psychotic) so COVID test done. She is sedated with IM benzo [intramuscular benzodiazepine] and eventually blood is drawn. Looking at her chart she uses methamphetamine frequently by injection. She likely has meth-induced psychosis but looks gravely disabled. Will stay for hours in the main ED awaiting COVID test result (eventually negative) until she can be transferred to PES [Psychiatric Emergency Services] (fieldnotes).

Changes in Care Over Time

Four sets of changes have been observed in the delivery of mental health services since the initial surge of COVID-19 cases at the Trauma Center in April that paralleled the changes in demand and supply of services during the initial surge: (1) changes in need for services; (2) changes in patient and provider perceptions of risk of COVID-19 infection; (3) changes in clinical procedures, (4) changes in institutional capacity to deliver care. The first change paralleled the changes in need for services observed during the initial surge, which the other three changes paralleled the changes in access to and availability of services. Each of these changes are discussed in detail below.

Changes in Patient Need for Services

The first set of changes observed since the April surge was changes in patient needs for mental and behavioral health services. Despite the lack of available census data at the time to support the claim, one of the POs noted that although the number of gunshot victims appeared to have been unchanged, there did seem to be a decline in motor vehicle accident victims, which was attributed to the fact that people were driving less. However, there also was a perception that since April, the cases that have appeared in the

TC have been the result of engaging in risky or deliberately harmful behavior.

So what I'm hypothesizing this week is that folks who are getting injured are those that have a lot of risk factors for PTSD and depression so they're more risky, they're more, less concerned for themselves due to, I don't know what, but a lot less of what we call, what we refer to as folks that are you know, really just wrong place, wrong time kind of deal because there's just less people out and about doing things, we also have folks that were hiking and they meet like, one risk factor like they're a woman or something and they don't make it to the list but they're on the main trauma center list. And so, anyways we're just noticing a lot less folks that may also have risk factors and just had an off-chance motor vehicle crash or hiking misstep or something (debriefing interview).

An increase in injuries due to violence was also reported: "We have quite a few folks who have been shot, stabbed, just generally assaulted otherwise" (jotting). The increase in these types of cases have been attributed to stress due to prolonged isolation and confinement resulting from stay-at-home orders and to financial stress from work furloughs and layoffs. According to staff interviewed by one of the POs, some of patients being treated for mental health problems were doing poorly in isolation. Other patients deliberately put themselves at risk for infection or did not care for their health while at home because they had no access to the in-person services they needed.

So, you know, I can't call it causal but we're seeing a noticeable increase in fatal overdoses around the country, fatal opioid overdoses... I have to think that's because people can't, because, you know, what works for OUD [opioid use disorder] treatment is meds but also, kind of the social interactions and all the things that come with, you know, long-term addiction care and those people aren't getting that. So even though we're doing BUPE [Buprenorphine] and we're giving them buckets of meds and we're saying here's your 30 days of methadone, like they're still not getting that in-person recovery support that they need. And all this, you know, all the services; housing and jobs, and there's no jobs and so what are, you know, what are people filling up their time? And the same with alcohol (debriefing interview).

Changes in Access to and Availability of Services

After the initial surge, POs reported three specific changes that impacted access to and availability of mental and behavioral health services. The first change observed was

with patient and provider perceptions of the risk of COVID infection, which improved access and use of services. For patient-provider interactions that did not occur via telehealth, several changes in procedures were noted by the POs and attributed to changes in the perceptions of risk of infection with COVID-19 reported by patients and providers alike. Providers became more comfortable with the occasional exceptions required by medical care provision to strict social distancing requirements, in part, because everyone was now wearing masks, all ED patients and inpatients were now tested for COVID-19 at admission, and providers had more access to COVID testing in case of symptoms or a COVID exposure occurring.

People are in the hospital and like I said it's still hard to social distance just like back in March and April. But there's-people aren't that worried in the hospital. A big thing in the trauma wards is that everyone's tested when they come in. And you've had like 2 or 3 days and the nurses are tracking temperatures. So that's-I don't think people are worried. People are washing, everyone's got their mask you know. So, I think that's less of a worry. No one's saying "I'm afraid of coming out of my room. People are going to give me COVID." That's not really happening now much (debriefing interview).

The imposition of a widespread testing program for patients and providers appeared to have reduced the fear of getting infected from other providers because "things are better organized now at the hospital," as one PO indicated in the field notes. "Providers and patients alike have gotten the public health message", leading to a reduction in confusion and suspicion that others might be infected or might know more about what is going on with respect to the risk of disease transmission. Providers were also now strongly encouraged to take sick leave when ill for any reason, despite staff shortages, to reduce the risk of infection.

And somewhat of less, yeah, quite a bit less suspicion. I remember walking around the hospital, I guess in late May, early June, and you know, there's just lots of, you know side-eyeing of like, do you have it or just I don't know, mistrust in general, yeah feeling of mistrust and confusion. And so now when you walk, there are signs that tell you exactly what to do, you know stand at this X until you get called, you know this name and then come straight up to the desk and make sure you got the mask. So, there's just, and to my, to my knowledge it's been well received by the public too (debriefing interview).

Perhaps the most significant change in procedures for delivery of mental health services in particular was the use of widespread telehealth for patient visits: "Everybody's

moved to telehealth so just about all outpatient services are moved to—can be provided via telehealth,” according to one of the POs. In the social work unit, use of web-based platforms like Zoom was initially delayed because of issues of patient confidentiality. Over time, telehealth became widely used for patient consultations, although patients with serious mental health problems or needing physical health care continued to be seen in person. However, according to one provider, “The consistent COVID finding is that people need a lot of care coordination with telehealth, people are supposed to have it but the spottiness in services is something we’re constantly dealing with” (fieldnotes). Reluctance to be seen this way reported during the initial surge continued to be an issue for some patients. Providers also reported that some patients felt uncomfortable using telehealth because they had no private space at home.

But, yeah it was really encouraged to do the zoom option or phone option but it made, there were folks very strong opinions of like ‘I really don’t want to do this by phone’ like it’s very uncomfortable, either they don’t have the private space to do those sorts of calls. I would sometimes do calls with some of my patients who would just like be in the bathroom of the studio because their partner and roommate were like in another you know in the living room/ bedroom/kitchen (debriefing interview).

Patients either failed to follow up on making appointments or required frequent reminders of the time and date of their follow-up. As a result, they often missed their appointments. Trauma patients were also unfamiliar with the technological requirements for participating in follow-up virtual visits, such as downloading and installing Zoom prior to the appointment on a personal device that was connected to strong enough Wi-Fi to support Zoom functions. Oftentimes, the patient did not get the link in time to download Zoom before the appointment.

...there were many, many and continued and continued to be many, many missed appointments simply because zoom isn’t working or they didn’t get the link or didn’t download it in time and you know, the patient finally downloads it 15 minutes into the, 15 minutes before the appointment ends and jump on has 10 minutes to talk about the last month

However, this problem appeared to have been remedied by the merging of the Zoom platform with the health care system’s electronic medical record and links were sent to patients automatically. According to one of the POs, “the more automated things became, I think, and the more people got used to the idea of doing their visits by telehealth, it became a lot smoother” (debriefing interview).

Another impact of the pandemic was a decline in capacity of the health care system to deliver mental and behavioral health services for financial reasons. Clinicians noted subjectively that because of a decline in the number of patients since April, there appeared to be fewer resources and personnel in all four units delivering mental health services. Services had either not been delivered at all or were delayed, and fewer services delivered meant less revenue for the health care system. There were furloughs of mental health providers due to the financial crisis, resulting in gaps in coverage by clinicians.

I mean, I guess the only other thing to kind of note is there’s been furloughs among folks in the mental health field as well. You know, at a time that it’s so desperately needed, it seems pretty crazy. So, I know that my supervisor from the adult medicine clinic was furloughed for about a week and then he went on paternal, like, leave, so now he’s gone for about a month and a half or something. So, if you’re in a position where you work ongoing with folks with mental healthcare needs, you know, an absence of that amount of time is not ideal (debriefing interview).

The practice of furloughing clinicians and staff also resulted in increased workloads and financial stress.

Another group of providers impacted by changes in policies and procedures were peer specialists who provide support to patients. The peer specialists were members of the parent study who were previously injured traumatic injury survivors and/or had health conditions that left them particularly vulnerable to developing a severe case of COVID-19 if they were to contract the virus. Thus, the study team made the decision early on in the pandemic to discontinue in-person peer visits to patients, to protect the health of these team members. As described by one PO, “Well of course peers were supposed to be meeting people in person but one of our—you know talk about health risks, one of our peers is in her 70s. Another peer is in a wheelchair. So, these are health risks clearly for a pulmonary infection. Another peer was shot multiple times and has lost internal organ. They’re all at risk, you know, and we, it’s a whole—and you know the peers are virtual now” (debriefing interview).

Discussion

Consistent with an earlier study of the impact of the pandemic on all acute care services (Palinkas et al., 2020), several challenges to providing mental and behavioral health services in an acute care setting were reported by POs during the April surge. Many of these challenges were related to community and institutional efforts to control the spread of the coronavirus, including social distancing,

use of PPE, coronavirus testing availability, and sheltering in place. Challenges related to social distancing requirements included conducting clinical assessments while physically separated from patients, delivering services through telehealth, and not providing in-person services. Another set of challenges were related to the isolation and confinement associated with shelter-in-place orders by local and state governments, likely contributing to increased levels of stress and intentional trauma. Other challenges included patients and clinical staff varying adoptions of recommended public health measures, such as wearing face masks, delays in providing mental health services until coronavirus test results were available, and the fear of infection among both patients and providers.

Many of these challenges appear to have been successfully addressed in the following months, due in part to imposition of mandatory state and institutional guidelines for use of PPE, conducting routine coronavirus testing of providers and patients to protect them from infecting one another, improvements in use of telehealth for services delivery, increased use of sick days by providers to avoid infecting others, and less confusion and mistrust about prevention protocols and subsequent reduction in patient and provider fear of infection. Some of the challenges reported during the April surge persisted into the following months, including patient reluctance and/or inability to use telehealth and continued difficulty conducting clinical assessments using telehealth. However, several new challenges emerged, including an increase in expenses for infection control and reduction in clinical revenues due to fewer patients receiving care at the medical center, furloughs of mental health services providers and peer specialists in the ED, services not provided or delayed, increased stress due to fear of furloughs or increased workload of those not furloughed, and increases in patients seen with injuries due to risky behavior, violence, and substance abuse.

Many of the challenges to delivering mental health services via telehealth were also reported in an earlier study conducted on outpatient psychiatrists (Uscher-Pines et al., 2020) and in studies pointing to disparities in access to technology (Chang et al., 2021; Phimphasone-Brady et al., 2021). These challenges included privacy concerns, decreased clinical data for assessment, increased distractions, and lack of reliable access to a smart-phone, computer or internet. In addition, we identified lack of familiarity with the Zoom platform and difficulty scheduling appointments as initial challenges to the use of telehealth. Providers in inpatient psychiatry and the ED were not able to use telehealth because patients seen in these units were also undergoing treatment for acute physical injuries or drug overdoses in addition to mental health problems or sought care for these mental health problems in the ED. In

these settings, patients with severe mental and behavioral problems were still seen in person by the provider.

Our findings also highlight the relationship between COVID-19 and efforts to control its spread on the supply and demand for mental and behavioral health services. As illustrated by the conceptual framework depicted in Fig. 1, the characteristics of COVID-19 and the initial surge in Seattle led to the implementation of policies and protocols in both the healthcare system and in the community to control the pandemic. Efforts to control the spread of the disease led to a significant reduction in hospital admissions and ED visits, which led to a reduction in clinical revenue (Rennert-May et al., 2021). These efforts adversely impacted the delivery of mental health services initially during the April surge and over the subsequent three months due to the costs of these efforts. Furloughing of clinical staff because of a decline in revenues has been reported elsewhere (Bai & Zare, 2020; Kliff, 2020).

The relationship between the disease and delivery of mental health services found in this study is supported by several studies reporting an increase in the need or demand for mental health services as a consequence of pandemic-related prolonged isolation and confinement, fear of infection and of mortality once infected, and sudden unemployment or financial stress (Czeisler et al., 2020; Ettman et al., 2020; Gallagher et al., 2020; Holingue et al., 2020; Jia et al., 2020; Li et al., 2020; Pfefferbaum & North, 2020). These stressors, in turn, led to an increase in ED admissions for traumatic injury with mental health comorbidity (Krass et al., 2021; Yard et al., 2021), despite an overall decline in ED visits in general (Adjemian et al., 2021). The pandemic also led to an increase in efforts to control the spread of the coronavirus in the healthcare system through social distancing, use of PPE, and testing, and in the community through mandates to stay at home and shelter in place. These efforts, in turn, led to a decline in capacity due to their costs to the healthcare system and a disinclination of trauma survivors to come for treatment. The decrease in capacity also exacerbated the frequency and severity of mental health issues in need of treatment.

There are several models and conceptual frameworks highlighting the relationships between supply and demand of mental health (Doessel et al., 2010) and other health services (Gravelle et al., 2003; Vassal et al., 2016) from an economic perspective. Although others have developed conceptual frameworks to address impacts of economic shocks on services supply and demand (Glonti et al., 2015; Kondilis et al., 2013), the framework introduced in this study examined these relationships from the perspective of a pandemic which increased demand and reduced supply for mental and behavioral health services. Among the implications of these findings is the need for pandemic planning to include provisions for addressing the financial

impacts of infection control and the need to rapidly implement infection control provisions that could limit service delivery during future pandemics. Greater priority should also be given to the mental health services to address the increase in demand as well as the constraints to using telehealth in psychiatric inpatient and ED units.

The study occurred in a healthcare setting that was one of the first to be impacted by the pandemic. However, the impacts associated with the pandemic in this setting have not been as severe as has been the case elsewhere, especially in New York City (Palinkas et al., 2020), limiting the generalizability of our findings. Furthermore, our findings are limited by the constraints of engaging in participant observation while also performing intensive clinical tasks, especially under conditions of social distancing and use of PPE. Doing so may have limited the abilities of the POs to hear and observe others in their immediate vicinity at the study site. However, this potential limitation was counterbalanced by having more than one investigator engaged in participant observation in different parts of the ED and trauma center. In contrast to studies of previous infectious disease pandemics (Czeisler et al., 2020; Ettman et al., 2020; Gallagher et al., 2020; Holingue et al., 2020; Jia et al., 2020; Li et al., 2020), no standardized measures were used to assess mental health status, making it impossible to determine the extent to which patients were adversely impacted by the reported challenges to service delivery. Similarly, qualitative observations regarding pandemic-related variations in injury mechanisms (e.g., pandemic related reductions in motor vehicle crashes or increases in assaultive injuries), were not verified by quantitative data sources. Future investigation should use sources such as trauma registries to document such variations. Finally, the RAPICE methodology had not been validated elsewhere at the time when this study was conducted. It was chosen because that the research staff was familiar with this protocol and there was no time to validate prior to utilizing. However, a community-based version of the protocol was subsequently used in other settings (Palinkas et al., 2021).

Despite these limitations, this study is one of the first to be conducted that examined the impact of a still-unfolding infectious disease pandemic on delivery of mental health services to a high-risk population. Although previous studies of acute healthcare responses to infectious disease pandemics have also noted changes in clinical procedures (Palinkas et al., 2020), this is the first study to our knowledge to examine the impact of these changes on delivery of mental health services. The study utilized a standardized protocol for conducting ethnographic research that enabled us to collect and analyze data in a short period of time with minimal impact on patients or providers under conditions of social distancing and PPE use.

Conclusion

Challenges to delivering mental and behavioral health services to patients presenting at a trauma center and ED increased considerably during the COVID-19 pandemic. Most of the challenges that occurred during the initial surge of COVID-19 cases in April were successfully addressed by standardization on infection control protocols, but new challenges emerged due largely to the financial losses associated with the pandemic itself. Ironically, the supply of services experienced a decline due to furloughing of mental health personnel at a time when the mental health problems of trauma patients were increasing in frequency and severity. These findings illustrate the rapidly shifting nature of both the pandemic, its impacts, and the mitigation efforts of communities and healthcare systems.

Author Contributions LAP and DZ conceived and designed the study and the analysis plan. LW AE and DZ collected the data and participated in data analysis, along with LAP. KM provided study project management. All authors contributed intellectual content during the drafting and revision of the work and approved the final version.

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Data Availability Data used in this study is available from the corresponding author upon reasonable request. All personal identifiers found in the data will be removed prior to sharing.

Declarations

Conflict of interest All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: all authors had financial support from the Patient-Centered Outcomes Research Institute and National Institutes of Health for the submitted work; no financial relationships with any organizations that may have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Ethical Approval All study procedures were approved by the IRBs of the University of Washington and University of Southern California (UP-20-00298) prior to the initiation of the investigation. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Research Involving Human and Animal Rights The authors affirm that human research participants provided informed consent for publication of the quotations that appear in the Results.

Standards of Reporting The authors used the EQUATOR network's Standards for Reporting Qualitative Research (SRQR) in preparing this manuscript. A completed SRQR report appears as supplementary material.

Transparency Statement The lead author (the manuscript's guarantor) affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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