Use of information and communication technologies among individuals with and without serious mental illness

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ABSTRACT

Growing interest surrounds the use of information and communication technologies(ICTs) for mental-health-related purposes, yet little is known about rates of ICT use among the psychiatric population and those with severe mental illness. This study examines ICT accessibility among the psychiatric population, focusing on serious and non-serious mental illness (SMI and non-SMI). Patients ($N = 427$) from all service branches of the Psychiatry Department at Emek Medical Center were recruited orally or through advertisement. Responders completed a self-report survey regarding accessibility and use of ICTs (i.e., computer, internet, Facebook, mobile phone, smartphone). Results revealed that 59.3% of respondents used computers, 77.3% used the internet, 92.7% owned a mobile phone, 67.9% owned a smartphone, and 63% used Facebook. Over half of participants who used ICTs reported doing so at least once per day. SMI and non-SMI respondents differed significantly in their use and access to a computer, the internet, Facebook, and smartphones. Results suggest that mental illness is not a barrier to using and accessing technology; however, when differentiating between SMI and non-SMI, illness severity is a barrier to potential ICT utilization. These results may encourage policymakers to design ICTs that suit the needs of individuals with SMI.

1. Introduction

In recent years, information and communication technologies (ICTs) such as the internet and smartphones have played a unique role in the treatment and management of mental health problems. Innovative technology-based programs have demonstrated utility and promise in the care of patients suffering from autism spectrum disorder (Grynszpan et al., 2014), depression and anxiety (Andrews et al., 2010; Christensen et al., 2004; Griffiths et al., 2010), post-traumatic stress disorder (Sijbrandij et al., 2016), psychotic spectrum disorder (Brunette et al., 2016; Khazaal et al., 2015; Killikelly et al., 2017), stress management (Winslow et al., 2016), and substance use disorders (Moore et al., 2011; Wallace and Bendtsen, 2014). Despite substantial literature extolling the effectiveness of ICTs, an evidence–practice gap exists in the slow adoption and integration (i.e., general underutilization) of digital initiatives in clinical mental health settings (Batterham et al., 2015; Meurk et al., 2016).

Previous studies have investigated the rate of internet use in psychiatric populations and found that between 34–81% of patients with psychiatric diagnoses used the internet (Bauer et al., 2016; Borzekowski et al., 2009; Carras et al., 2014; Kalckreuth et al., 2014; Khazaal et al., 2008). However, the wide variation in reported use indicates differential sensitivity with multiple potential explanations. One such reason is the time during which such studies were conducted, given the rapid proliferation of ICT products (e.g., increased availability of free public Wi-Fi access). This issue may be further compounded by the time lag between research completion and publication. For instance, work by Carras et al. was conducted between 2010 and 2011 and examined the rate of internet use at an inner-city community psychiatric clinic in the US. They found that 59% of patients used the internet (Carras et al., 2014). This study was finally published in 2014, after an approximate 12% expansion in worldwide internet access (Internet World Stats, 2017a). Second, the diversity of study samples were limited in many cases; for instance, Carras et al. noted that most of their sample had serious mental illness (SMI) without elaborating on diagnoses. Khazaal et al. found that 68.5% of patients in

Switzerland used the internet. However, this study was restricted only to outpatient settings without evaluating participants' diagnoses (Khazaal et al., 2008). A study byKalckreuth et al. found that 79.5% of general psychiatric patients at a university hospital in Germany were internet users, but the study did not address patients with SMIdirectly (Kalckreuth et al., 2014). Likewise, a study conducted in the US in 2014 found that 97% of psychiatric outpatients owned a mobile phone and 72% owned smartphones. This study was restricted to a small (N = 100) outpatient clinic (Torous et al., 2014b). Yet an expanded study,using the same survey and research protocol, assessed a larger sample (N = 320) in four different psychiatric clinics and revealed that the average rate of mobile phone ownership was 86% and 62.5% for smartphones(Torous et al., 2014a), each lower than their previous study. This discrepancy may indicate a need for additional investigation using larger samples of patients diagnosed with diverse psychiatric conditions.

Results from previous studies, combined with the continual development of ICTs, highlight the need for an up-to-date anddetailedexploration of the accessibilityand use of ICTs in mental health settings. Individuals with SMI such as schizophrenia, schizoaffective disorder, bipolar disorder, and depression warrant close attention due to the tremendous impact of such diagnoses on patients' quality of life and the associated burden these conditions pose to society. However, few studies have examined the use of personal computing devices by individuals with SMI (Bauer et al., 2016; Ben-Zeev et al., 2013; Borzekowski et al., 2009). Borzekowski et al., (2009) surveyed 100 outpatients in the US and found that 34% of those surveyed with SMI used theinternet; however, SMIstatus was based on self-report. Later, Ben-Zeev et al., (2013) examined use and ownership of mobile devices among participants with SMI (N = 1,592) and found the rates to be significantly lower (72%) than those of the general adult population. Recent work by Bayer et al. (2016) focused specifically on internet use in patients with bipolar disorder, revealing that 86% used the internet.

Despite the rapid development of the electronic (e-)mental health field and use of technology-based interventions (e.g., BetterHelp), scarce research existsregarding personal technology use among the psychiatric population,especiallyfor individuals with SMI. Emerging technologies may help to alleviate challenges associated with assessing and treating SMI patients and engaging them in the treatment process (Ben-Zeev et al., 2013; Depp et al., 2016). Thus, when conceptualizing digital interventions for different patient groups and psychiatric diagnoses, it is important to know the rates of ICT use withinsuch populations to facilitate the development oftreatment plans involving technology aimed at improvingSMI patients' quality of life. Hence, the present study seeks to identify accessibility and use of ICTs among the psychiatric population by focusing on SMI and non-SMI groups, namely by evaluating usage rates of different ICTs (i.e., computer, internet, Facebook, mobile phone, smartphone). This empirical study of a large, diverse sample of psychiatric patients seeks to detect hypothesized differences between SMI and non-SMI patients. Additionally, we propose that the study's results will underscore the importanceofadaptingtechnologyto suitthe unique needs of individuals with SMI.

2. Methods

2.1. Subjects

This research was conducted from January to May 2017 at the Psychiatry Department at Emek Medical Center in Afula, Israel. EmekMedical Center is a large,urban, tertiary-care teaching hospital in the northeastern part of Israel. The site provides healthcare services to over 500,000 habitants ofdiverse ethnic and religious backgrounds living in major cities,towns, and villages. The model of carefollowed by the Psychiatry Department is similar to that of other developed countries in that it provides services to patients with various psychiatric

conditions in outpatient, inpatient, and psychiatric emergency room settings.

To maximize face validity, our sample was composed of patients treated in any of the department's settings during the study period whoagreed to complete a paper-based self-report survey. The inclusion criteria were as follows: (1) between 18–70 years old; (2) at least one psychiatric diagnosis according to the ICD-10; and (3) sufficient knowledge of either Hebrew or Arabic. Exclusion criteria included a diagnosis of intellectual disability, cognitive decline, or any mental or physical state that impaired prospective participants' ability to understand and complete the survey. Each respondent's diagnosiswas provided by a senior psychiatrist according to ICD-10 criteria. Diagnoses wererecorded in patients' medical records and treated confidentially by encrypting diagnoses in a password-protected computer program. Respondents were not offered any financial reward or other incentive for participation. Ethical approval for the study was granted by the institutional ethics committee (EMC-0143-15) and in accordance with the Declaration of Helsinki.

2.2. Survey

The paper-based self-report survey contained 65 questions and tookapproximately 30 minutes to complete. The survey was translated from previous studieswith authors' permission (Carras et al., 2014; Musiat et al., 2014; Torous et al., 2014b)into Hebrew and Arabic using a forward-backward process. Some items were modified slightly to suit the study population. The survey consisted of four sections: (i) sociodemographic information; (ii) patterns of ICT use (i.e., computer, internet, Facebook, mobile phone, smartphone); (iii) online health-related information-seeking behavior; (iv) aquestionnaire regarding attitudes and expectations toward mental health treatment. Out of availablesocial networks, we decided to include only Facebook in the survey because of its high usage rate in Israel compared with other social platforms (Stat Counter Global Stats, 2017).

2.3. Procedure

Patientswere invited to participate in the study either orallyduring patient appointments in thePsychiatric Department or through a general notice (i.e., advertisement) posted on bulletin boards around the department. Patients who volunteered to participate in the study provided informed consent after receiving an explanation about the aims and nature of the study. All surveys were completed in patients' respective clinical settings (i.e., outpatient care, inpatient care, or psychiatric emergency room) between scheduled appointments, counseling sessions, and treatment meetings. To ensure anonymity, each patient who completed the survey was assigned a random code that was registered separately on an encrypted coding list. The principal investigator was blind to the identities of the patients, as the co-investigator was responsible for matching diagnoses from eachdigital medical record to the coding list.

2.4. Diagnostic group

The three clinical settings within Emek Medical Center'sPsychiatry Department treat a spectrum of psychiatric diagnoses of varying severity. This variability afforded researchers the opportunity to compare groups based on diagnoses and demographics. No consensus currently exists regarding a uniform definition ofSMI in the literature (Schinnar et al., 1990). Although we acknowledge the importance of quantifying illness severity based on functional impairment and illness-related disability (Kessler et al., 2003), we decided to divide the study sample (N = 427) according to disorder severity: the SMI group (n = 216) included patients with psychotic and affective spectrum conditions (i.e., schizophrenia, acute and transient psychotic disorder, delusional disorder, schizoaffective disorder, bipolar disorder, and