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Review

Online, social media and mobile technologies for psychosis treatment: A systematic review on novel user-led interventions

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ABSTRACT

Background: Internet and mobile-based interventions provide a unique opportunity to deliver cost-effective, accessible, time-unlimited support to people with psychosis. The aims of this study were to systematically compile and analyze the evidence on the acceptability, feasibility, safety and benefits of online and mobile-based interventions for psychosis.
Methods: Systematic review of peer-reviewed studies examining the usability, acceptability, feasibility, safety or efficacy of user-led, Internet or mobile-based interventions, with at least 80% of participants diagnosed with schizophrenia-spectrum disorders.
Results: Of 38 potentially relevant articles, 12 were eligible for inclusion. Interventions included web-based psycho-education; web-based psycho-education plus moderated forums for patients and supporters; integrated web-based therapy, social networking and peer and expert moderation; web-based CBT; personalized advice based on clinical monitoring; and text messaging interventions. Results showed that 74–86% of patients used the web-based interventions efficiently, 75–92% perceived them as positive and useful, and 70–86% completed or were engaged with the interventions over the follow-up. Preliminary evidence indicated that online and mobile-based interventions show promise in improving positive psychotic symptoms, hospital admissions, socialization, social connectedness, depression and medication adherence.
Conclusions: Internet and mobile-based interventions for psychosis seem to be acceptable and feasible and have the potential to improve clinical and social outcomes. The heterogeneity, poor quality and early state of current research precludes any definite conclusions. Future research should investigate the efficacy of online and mobile interventions through controlled, well-powered studies, which investigate intervention and patient factors associated with take-up and intervention effects.

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1. Introduction

Advances in the treatment of psychosis have led to an improved prognosis in relation to symptom management (van Os and Kapur, 2009). However, relapse rates after initial response to acute pharmacological treatment are stubbornly high (Alvarez-Jimenez et al., 2012c) and clinically meaningful improvements in functional outcomes remain elusive (Alvarez-Jimenez et al., 2012b).

Novel concomitant psychosocial interventions targeting relapse prevention, symptom management and functional recovery have demonstrated effectiveness above and beyond that of pharmacotherapy alone (Mueser et al., 2013). Unfortunately, studies uniformly point to penetration rates for psychosocial interventions of less than 10%, leaving many patients with limited or no access to evidence-based psychological support (Lehman and Steinwachs, 1998; Lehman et al., 2004). Reasons for poor accessibility include costly delivery and dissemination of specialized interventions, geographic barriers and transportation costs, and the stigma associated with mental health treatment, which limits help seeking and treatment attendance among people with severe mental disorders (Corrigan, 2004; Alvarez-Jimenez et al., 2012a).

The rapid development of novel information and communication technologies (ICTs) has dramatically transformed the way in which

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people interact with one another and the wider community. Never before have information and communication been so accessible to so many. The Internet has also become a powerful source of information and support for patients with psychosis (Haker et al., 2005), with the potential to significantly influence health related behaviors and decisions as well as the clinician–patient relationship (Schrank et al., 2010). Emerging evidence indicates that the use of the Internet by people with psychosis resembles that of individuals not affected by mental illness (Haker et al., 2005; Schrank et al., 2010). People with psychosis use the Internet effectively to create social connections enabling the development of both virtual and face-to-face relationships (Spinzy et al., 2012). In addition to the general advantages such as accessibility and the capacity to access a wide array of resources (Fox and Rainie, 2000), people with psychosis resort to the Internet because of the anonymity and absence of a hierarchy on the Web and its potential to assist in overcoming difficulties with social interaction (Schrank et al., 2010).

Given the acceptability and accessibility of novel ICTs, Internet and mobile-based interventions provide an unprecedented opportunity to overcome existing barriers by delivering cost-effective, non-stigmatizing, time-unlimited support to people with psychosis. However, while several meta-analyses have shown that online interventions are effective for treating depression and anxiety (Spek et al., 2007; Van't Hof et al., 2009; Andrews et al., 2010), the use of the Internet and mobile technologies has been rarely applied to the treatment of psychotic disorders. Recent reviews examined online interventions for people with psychosis, but these either focused on telepsychiatry (Kasckow et al., 2013) (i.e., traditional therapy delivered via mobile phones or videoconference) or were not systematic (Alvarez-Jimenez et al., 2012a), thus omitting relevant studies. A rigorous examination of the emerging evidence on the potential of these technologies to support psychosis treatment will help identify promising treatment opportunities and inform further research. The aims of this study were to systematically compile and analyze the current evidence on the acceptability, feasibility, safety and benefits of Internet and mobile-based interventions for people suffering from psychosis.

2. Method

This review was carried out in line with the PRISMA statement for reporting systematic reviews (Liberati et al., 2009).

2.1. Data sources

Systematic bibliographic searches were performed to find relevant English and non-English language, peer-reviewed, studies from the following databases: the Cochrane Central Register of Controlled Trials (CENTRAL), Medline, CINAH, EMBASE, PsycINFO, Scopus, Information Science Citation Index Expanded (SCI-EXPANDED), Information Social Sciences Citation Index (SSCI), and Information Arts and Humanities Citation Index (A&HCI), all from inception to August 2013. Conference abstracts were searched from Conference Proceedings Citation Index-Science (CPCI-S) and Conference Proceedings Citation Index-Social Science & Humanities (CPCI-SSH). The abstracts, titles and keywords of studies were searched using combinations of the following terms: (PSYCHOSIS or SCHIZOPHR* or PSYCHOTIC) and (INTERNET or ONLINE or WEB-BASED or WEBSITE or MOBILE). Additional articles were identified by hand-searching the references of retrieved articles and previous reviews. Finally, authors and other experts were contacted for unpublished studies.

2.2. Study selection

Considered for inclusion were studies examining the usability, acceptability, feasibility, safety or efficacy of user-led, Internet or mobile-based interventions, with at least 80% of participants diagnosed with schizophrenia-spectrum disorders using either DSM or ICD criteria.

Internet interventions were defined as web-based interventions enabling peer-to-peer contact, patient-to-expert communication or interactive psycho-education/therapy. Mobile-based interventions were defined as interventions delivered via mobile phones using SMS, MSS, mobile or web-applications. User-led support was defined as interventions in which participants led or directed the timing, content or interaction with the web or mobile-based intervention. Studies investigating traditional face-to-face therapy delivered via teleconference of mobile phones and studies recruiting less than 10 participants were excluded (Fig. 1).

Two reviewers (M.A.-J. and M.A.-C.) independently assessed all potentially relevant articles for inclusion. Any disagreements were resolved through discussion. If necessary, authors were contacted to determine eligibility against inclusion criteria.

2.3. Data extraction and analysis

Two reviewers (M.A.-J. and M.A.-C.) independently extracted relevant data from selected studies including: (1) the characteristics of the study (i.e., study design, study aims, year of publication, country of origin, sample characteristics and follow-up time in weeks); (2) characteristics, nature and purpose of the online or mobile-based intervention and comparison groups (if applicable); (3) intervention setting (i.e., hospital-based/controlled environment vs. real-world); and (4) research findings in relation to study aims. Specifically, data pertaining to the following domains was extracted and analyzed: (1) users' engagement with, and use of, the online or mobile-based intervention; (2) drop-out rates; (3) users' evaluation of usability, attractiveness and helpfulness of the intervention; (4) variables associated with use of, and engagement with, the intervention; (5) adverse events and safety of the intervention; (6) challenges in implementing and using the online or mobile-based intervention; (7) clinical outcomes (i.e., symptom-based outcomes); and (8) psychosocial outcomes (i.e., social and functional outcomes). Interventions were categorized according to delivery format into either web-based interventions (i.e., designed to be accessed mainly via computers) or mobile-based interventions (designed to be accessed through mobile devices, e.g., SMS-based interventions). Web-based interventions were further categorized according to intervention approach (online therapy (e.g., psycho-education, CBT) vs. online therapy in tandem with online social networking), and target group (i.e., patients, carers or both patients and carers). This category system was informed by previous literature indicating that delivery format, user group, and online social networking are likely to influence both take-up and efficacy (Alvarez-Jimenez et al., 2012a). To minimize the risk of reporting bias, efforts were made to extract and report positive and negative findings from the included studies. Any discrepancies were resolved by consensus.

2.4. Assessment of methodological quality and procedures

For controlled studies methodological quality was assessed by means of the Cochrane Collaboration 'risk of bias' tool. This measure is a 2-part tool that addresses 6 different domains of methodological quality, namely, sequence generation, allocation concealment, blinding, incomplete outcome data, selective outcome reporting, and other biases. The 'other bias' domain was assessed through the following criteria: (1) balance/imbalance of baseline characteristics across study groups; (2) acceptability of and retention in the intervention assessed against a priori criteria; (3) patients in both groups spending an equivalent amount of time in treatment; (4) statistical power to detect moderate effect sizes. Two reviewers (M.A.-J., C.G.-B) independently assessed the methodological quality. Any disagreements were resolved through discussion. For uncontrolled studies we assessed the following criteria: (1) blinding to study design or purpose; (2) incomplete