## **ARTICLE IN PRESS**

Rev Psiquiatr Salud Ment (Barc.). 2017;xxx(xx):xxx-xxx



# Revista de Psiquiatría y Salud Mental



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#### **REVIEW ARTICLE**

# Use of mobile technologies in patients with psychosis: A systematic review \*

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Received 7 July 2016; accepted 9 January 2017

#### **KEYWORDS**

Mobile; Psychosis; Schizophrenia; Adherence; Psychopathology Abstract There is a growing interest in mobile Health interventions (m-Health) in patients with psychosis. The aim of this study is to conduct a systematic review in order to analyse the current state of research in this area. The search of articles was carried out following the PRISMA criteria, focusing on those studies that used mobile technologies in patients with psychosis during the period from 1990 to 2016. A total of 20 articles were selected from the 431 studies found. Three types of studies are distinguished: (1) Analysis of quality and usability, (2) Improving treatment adherence and reducing hospital admissions, and (3) Analysis of patient symptoms. Conclusions: m-Health interventions are feasible, and are easy to use for patients with psychosis. They evaluate the evolution of psychotic symptoms more efficiently, and improve adherence to treatment, as well as symptoms and hospital admissions. However, a particular strategy does not stand out over the rest, because differences in methodology make them difficult to compare.

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<sup>\*</sup> Please cite this article as: Bonet L, Izquierdo C, Escartí MJ, Sancho JV, Arce D, Blanquer I, et al. Utilización de tecnologías móviles en pacientes con psicosis: una revisión sistemática. Rev Psiquiatr Salud Ment (Barc.). 2017. http://dx.doi.org/10.1016/j.rpsm.2017.01.003

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#### PALABRAS CLAVE

Móvil; Psicosis; Esquizofrenia; Adherencia; Psicopatología

#### Utilización de tecnologías móviles en pacientes con psicosis: una revisión sistemática

Resumen Hay un creciente interés en las intervenciones mobile Health (m-Health) en pacientes con psicosis. El objetivo de este estudio es realizar una revisión sistemática para analizar el estado actual de la investigación en este ámbito. La búsqueda de publicaciones se llevó a cabo siguiendo los criterios PRISMA, centrándose en aquellos estudios que utilizan tecnologías móviles en pacientes con psicosis durante el periodo de 1990 a 2016. Se seleccionó un total de 20 artículos de los 431 estudios que se encontraron. Se diferencian 3 tipos de intervenciones: 1) análisis de calidad y usabilidad; 2) mejora de la adherencia, síntomas y reducción de hospitalizaciones, y 3) análisis de la sintomatología del paciente. Conclusión: Las intervenciones m-Health son viables y resultan fáciles de utilizar para los pacientes con psicosis. Evalúan de forma más eficiente la evolución de los síntomas psicóticos y mejoran la adherencia al tratamiento, los síntomas y las hospitalizaciones. No se puede destacar una estrategia sobre las demás debido a que las diferencias en la metodología las hace difícilmente comparables. © 2017 SEP y SEPB. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

#### Introduction

In recent years information and communication technology (ICT) applied to health have evolved extremely quickly. This has led to a change in the patient-doctor relationship, as now the "empowered patient" has emerged. This refers to individuals who are knowledgeable and have information about their disease, who are involved in their treatment and able and interested in contributing and deciding about it (equipped, enabled, empowered and engaged). <sup>1</sup>

Electronic Health (e-Health) technologies combine the use of electronic communications and ICT have clinical, educational, ethical and administrative uses, with the aim of improving the healthcare system, promoting health and increasing the access of the whole population to healthcare. One of its components is mobile Health or m-Health, defined by the World Health Observatory as "the medical or public healthcare practice supported by mobile devices, patient monitoring devices, personal digital assistants (PDA) and other wireless devices".<sup>2</sup>

These technologies have been used in the treatment of a wide range of physical and mental pathologies.<sup>3,4</sup> Of these, psychosis is an interesting field due chiefly to the low level of adherence of these patients, as 70% will have abandoned their antipsychotic treatment 18 months after commencing it.<sup>5</sup> The use of m-Health interventions which enables continuous, direct and personalised evaluation, gives the patient a greater role in his treatment and may improve this situation.

A growing number of studies have been undertaken during the past 20 years with the aim of increasing psychosis patient adherence through the use of mobile applications. However, it is hard to extract conclusions from these studies due to the differences between them in terms of sample selection, study procedure or the technique used.

The aim of this study is to carry out a systematic review of the literature to obtain an overview of the state of research into the use of mobile applications in patients with psychosis to improve adherence to treatment.

### Methodology

Some of the recommendation and criteria of the PRISMA6 declaration were followed in undertaking this review. Studies were selected that centre on the analysis of the acceptability, viability, use and possibilities of therapy using mobile devices in the treatment of psychotic patients. The following inclusion/exclusion criteria were applied:

- We considered mobile device (PDA, mobile telephone and/or smartphone) based interventions to be those which use SMS (short message service) and/or mobile applications (apps). This therefore exclude mobile interventions that only use services based on telephone calls.
- 2) Studies were selected that covered patients diagnosed with psychotic disorder according to the definition and classification of the fourth and fifth editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, DSM-IVR and DSM-5), including: schizophrenia, schizoaffective disorders, bipolar disorder and other psychoses. Studies were included with hospitalised patients as well as follow-ups in outpatient departments.
- Articles published in the English language from 1990 to 2016.

The data bases PsycINFO, PubMed, Scopus, Medline, ISI Web of Knowledge and the bibliographical data of the CSIC IME were used to search for publications. The following terms or key words were used: "Cell phone AND schizophrenia", "Cell phone therapy AND mental health", "Mobile assessment AND treatment schizophrenia", "Mobile phone applications (apps) AND mental health", "Smartphone AND schizophrenia adherence", "The use of smartphones in antipsychotic adherence", "The use of smartphones in psychosis", "Cell phone AND psychosis" and "SMS AND psychosis".

The publications were first screened by reading their titles and summaries of their results contained in the databases, checking to see whether they fitted the above

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