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A Critical Review of the Use of Technology to Provide Psychosocial Support for Children and Young People with Long-Term Conditions

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Advances in technology have offered health professionals alternative mediums of providing support to patients with long-term conditions. This critical review evaluated and assessed the benefit of electronic media technologies in supporting children and young people with long-term conditions. Of 664 references identified, 40 met the inclusion criteria. Supportive technology tended to increase disease-related knowledge and improve aspects of psychosocial function. Supportive technology did not improve quality of life, reduce health service use or decrease school absences. The poor methodological quality of current evidence and lack of involvement of users in product development contribute to the uncertainty that supportive technology is beneficial.

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IT IS ESTIMATED up to 20% of the school-age population have a long-term condition (Van Cleave, Gortmaker, & Perring, 2010). This creates a significant burden on healthcare systems, as the care of children and young people involves not only providing medical/physical support but also ensuring developmental milestones are achieved and that children and young people are enabled to optimize their potential to transition into adulthood as active citizens (Department for Education & Skills, 2005). While many medical treatments traditionally have focused on physical function and health, there is the acceptance that in order to enhance long-term outcomes it is necessary to also support psychosocial function. In its broadest sense, psychosocial

support encompasses help with social, emotional, psychological and practical needs. Often, it can be perceived that there is not the same provision of services to support psychosocial function as there is for physical/medical well-being and therefore in order to optimize psychosocial support, healthcare providers have looked to develop alternative methods of interventions.

Historically, alternative methods to provide psychosocial support were paper-based, for example booklets detailing information on how to manage a particular disease. However, with the introduction and progress in electronic media technologies, health professionals have seized the opportunity to utilize these mediums to try to provide more innovative ways of supporting patients. Electronic media technologies are media that use electronics for the end user to access the content; the use of such technologies in healthcare has evolved from creating simple videos containing post treatment advice

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(Bakker, van de Putte, Kuis, & Sinnema, 2011) to the development of hi-tech multimedia programs (Jones et al., 2010; Krishna, Balas, Francisco, & Konig, 2006). Two previous Cochrane reviews on electronic media technologies have included studies spanning a wide age range (children and adults) and involved single modes of support: mobile phone messaging (de Jongh, Gurol-Urganci, Vodopivec-Jamsek, Car, & Atun, 2012) and computer-based applications (Murray, Burns, See Tai, Lai, & Nazareth, 2005). de Jongh et al. (2012) found some limited indications that mobile phone messaging interventions may provide benefit in supporting the self-management of long-term illnesses. Murray et al. (2005) concluded that the computer applications reviewed appear to have largely positive effects, in that users tended to become more knowledgeable, feel better socially supported, and may have improved behavioral and clinical outcomes. One review did focus on children and young people (Stinson, Wilson, Gill, Yamada, & Holt, 2009) but again only looked at one modality, Internet-based self-management interventions. Stinson et al.'s (2009) findings suggested an improvement in symptoms and conflicting evidence regarding disease specific knowledge and quality of life. With the rapid development of technology and the increase in interest in its use to support patients, this review sought to evaluate the use and benefit of electronic media technologies for children and young people with long-term conditions.

The primary aims of this review were:

1. To critically evaluate how technology has been used to provide non-physical/non-medical support for children and young people with long-term conditions;
2. To assess the benefit of technology for children and young people with long-term conditions.

Addressing these aims through the review would allow secondary aims to be examined:

1. To map the evolution of technology as supportive healthcare;
2. To propose key components essential when both developing and evaluating use of supportive technology in healthcare.

Methods

Search Strategy

An initial scoping review was undertaken using the Cochrane Library, which identified a systematic review of mobile phone technology (de Jongh et al., 2012) and a review of computer-based interventions (Murray et al., 2005). These reviews were used for cross-referencing purposes and to guide the search terms. The search strategy included a range of medical subject headings (MeSH) and free text terms related to: electronic media technology (e.g. mobile/cell phone, personal digital assistant, handheld computers, computer-assisted instruction, Internet, reminder systems and CD ROM/DVD); and outcomes (e.g. self-efficacy, adherence, self-concept). All study designs were considered because a randomized control trial is not necessarily

the most appropriate study design for evaluating a complex intervention (Craig et al., 2008). This design decision was undertaken in the knowledge that potential biases can result from including a range of study designs; quality assessment relevant to study design was undertaken to resolve these issues. The review was concerned with the benefits of technology-based interventions for patients in domains other than clinical outcomes because the focus was on patient-related outcomes rather than medical outcomes; therefore studies looking at solely clinical outcomes were excluded. The search was carried out using electronic databases (Medline, CINAHL Plus and PsycINFO), which were searched for literature published from the databases' inception until April 2013. Reference lists of included studies and other highly relevant papers identified in the search were checked for additional studies. This review only includes peer reviewed publications; the 'grey' literature was not searched.

Selection of Studies

Studies were eligible for inclusion in the review if they fulfilled the following inclusion criteria:

1. Reported an intervention involving the use of electronic media technology.
2. The intervention was aimed at children and/or young people aged 0–19 years with a long-term condition.
3. Involved evaluating a specific patient-reported outcome, e.g. quality of life.
4. Published in English in scientific literature.

Studies were excluded if:

1. The intervention was not aimed at children or young people (i.e. health professionals or parents); however, studies aimed at the child or young person that also involved parental support were included.
2. The outcomes were solely clinical (e.g. biomarkers of adherence); however, papers were included if secondary patient-reported outcomes were also presented.

An initial screening of the search results based on titles and abstracts was carried out by one reviewer (SA). This was independently reviewed by a second reviewer (RMT) and disagreements were settled by consensus. The full texts of potentially eligible studies were obtained. Information from each study was extracted directly into a Microsoft Excel file by three reviewers to ensure identical information was reviewed from all studies, which was cross checked by one reviewer. The data extraction tool was developed specifically for this review and the information that was extracted was informed by the recommendations of the Centre for Reviews and Dissemination (2009).

Assessment of Study Quality

Study quality was evaluated using established critical appraisal instruments: "Consolidated Standards of Reporting

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