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Use of communication technologies by people with type 1 diabetes in the social networking era. A chance for improvement

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ABSTRACT

Aims: To evaluate the health-related use of Web 2.0 tools by patients with type 1 diabetes.
Methods: Cross-sectional survey assessing views and usage of the Internet, Apps and Web 2.0.
Results: Number of participants: 289 (age 42.8 ± 13.5 years; diabetes duration 18.4 ± 12.2 years; 58.7% males; 39% with an upper secondary or higher education level). Web 2.0 usage for health purposes was low with 19.6% and 14% of Web 2.0 members (147; 50.9%) having health–related contacts and posting health comments. Health-related Apps were used by 35.4% of Smartphone owners (161; 55.7%). 75.3% patients would share information online with professionals, preferably through e-mail (78.7%) rather than Facebook (47.7%). 141 (66.5%) of those willing to share information would participate in a professional-moderated Facebook group.
Conclusions: Web 2.0 and Apps usage for health purposes is low. The difference between the use of Web 2.0 networks and the willingness to participate in professional-moderated Web 2.0 groups points to the need of a higher implication of health professionals in promoting Web 2.0 technologies if these are to be adopted in a clinical setting. Currently, e-mail is the tool to be considered when aiming to increase online communication with patients with type 1 diabetes.

1. Introduction

The advent of the Internet has definitely changed the way we gain access to health information [1,2]. In recent years Internet tools have evolved into the Web 2.0 environment which allows users to easily create and share content and interact through virtual networks rather than only accessing one-way information. Although most popular Web 2.0 networks such as Facebook or Twitter are mainly used for

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social interaction and emotional disclosure [3,4] these tools can potentially modify still more the way health-care and education are delivered [5–8].

Type 1 diabetes mellitus is a chronic disease usually diagnosed in children and young adults in which self-management is widely advocated [9]. These features make it an excellent candidate to test the use of new communication technologies in chronic diseases. Several studies have evaluated different aspects of the use of new communication tools in diabetes, such as the content available in social networks [10,11], the features of mobile applications [12,13] and the effectiveness of web-based support tools for self-management [14], usually involving highly motivated and technically skilled users or research settings. However, little is known about the use of and views on Web 2.0 technologies, which can increase the interaction with peers or professionals, in patients with type 1 diabetes in normal life.

Bearing in mind a future development of Web 2.0 tools, specifically a closed and health professional-moderated Facebook group, for patients in our Endocrinology Unit, it was our aim to evaluate how the people with type 1 diabetes we attend use the Internet and specifically Web 2.0 technologies and what is their willingness to participate in new forms of communication between healthcare users and providers.

2. Methods

The Endocrinology Unit of the Hospital General de Granollers is a university hospital which offers publicly funded specialized endocrinology services for a population of 245,000 inhabitants. Patients with type 1 diabetes are usually seen every 3–6 months based on individual needs. Therefore, a study period of 6 months from December 2012 to May 2013 was planned in order to evaluate all patients with type 1 diabetes who usually attend the Unit. During that period of time a total of 309 patients with type 1 diabetes with more than 1 year diabetes duration and age between 18 and 75 years were attended.

Survey items were constructed by the investigators to assess patients' views and usage patterns of the Internet, mobile apps and social media. A 24-item questionnaire was developed (Appendix 1), which was pre-tested with the first surveyed patients without major modifications. The questionnaire contained items designed to assess the frequency of patients' use of the Internet, mobile applications and social media as well as their use for health-related activities. We also surveyed their willingness to share information with health professionals through information technology tools (e-mail, WhatsApp, professional-moderated forum or Facebook, either alone or in combination) and specifically their willingness to participate in a future, and not further specified, Facebook group for patients and professionals within the Unit. It also contained a free text question addressing reasons for not wishing to use information technology tools for communication with health professionals. Demographic and clinical data were also collected through self-report of age, sex, education level, time since diagnosis of type 1 diabetes, diabetes related complications, treatment for other chronic conditions and "usual" level of HbA1c. No data were extracted from clinical records.

Eligibility criteria were type 1 diabetes duration ≥1 year and age 18–75 years.

The Local Research Ethics Committee does not require or grants the approval of studies that only involve surveys, provided that there are no clinical data obtained from clinical records, therefore the Committee was informed without asking for a formal approval.

The instrument was self-administered at the first clinical appointment during the study period after signing an informed consent form. Patients were able to ask any doubts about the questionnaire to the investigators.

Discrete and continuous variables were compared using the Pearson's chi-square test and Student's *t* test respectively. Logistic regression analysis was performed using the stepwise method to predict the use of the Internet, the willingness to share health-related information and the willingness to participate in a Facebook group. Qualitative variables are described in absolute and relative frequencies (percentages). Mean and SD were used to describe normally distributed quantitative variables. Differences between variables were considered significant when *P* value was less than 0.05. All analyses were performed using SPSS 11.0 software.

3. Results

Of the 309 eligible patients attended during the study period 289 were willing to participate. Power calculation renders that with a ratio of Internet access of 75%, the evaluation of 289 individuals offers a precision of 5% and a confidence level of 95%.

158 (54.7%) were male, the average age was 42.8 ± 13.5 years, 39% with upper secondary education level [15] or above, and diabetes duration was 18.4 ± 12.2 (range 1–55) years. Detailed demographic and clinical data according to the use of the Internet use are shown in Table 1. As shown, Internet users were younger, had a higher level of education, had diabetes of shorter duration and with fewer complications, and were more frequently men. Logistic regression analysis showed that the variables which predicted Internet use were age ($p < 0.001$) and education level ($p < 0.001$).

Table 1 also shows differences between patients according to Smartphone ownership and social networks membership. As shown, differences are rather similar to those found in Internet use except for education level, which was not different between members and not members of social networks, and the absence of sex differences in both comparisons. Facebook was by far the most frequently used social network (95%; 140 out of 147 members of social networks) while twitter was used by 26% (38 patients) and other networks by 22% (33 patients) of social network members.

Table 2 shows habits and health-related activities through new communication technologies. Access to health-related web sites was common with 60% of Internet users accessing them occasionally and 8.8% stating a frequent use. Women accessed health related web sites more frequently than men (77.8% vs. 62.4%; $p < 0.02$), with no other differences between groups. Of note, only 8.1% of Smartphone owners stated a