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## PRONTO FÁCIL: A SOFTWARE FOR PATIENT DATA AND HEALTH SERVICE MANAGEMENT FOR CLINICAL PSYCHOLOGISTS

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### Abstract

**Introduction:** Clinical and management data need to be stored in a manner that allows easy, safe and real time access. **Objective:** Develop a software for patient data and health service management for use on clinical psychologists' smartphones, tablets and computers. **Method:** This research used applied technology production for software application development, and was carried out in five steps: (1) Preliminary survey; (2) Target public contact retrieval and pilot research; (3) Definition of the development's basic aspects and questionnaire preparation for final research; (4) Initial development, beta testing and final questionnaire; (5) Development of the application's final version. **Results:** (1) Low records registration and methods used by clinical psychologists. (2) Reasons for low records registration and helping factors to change this. (3) Chosen a software language which was able to be used as platform independent when developing to Windows, Android and iOS, easy-to-read text fonts for everyone, pleasant colours and intuitive user interface. (4) First software version, group of testers and final questionnaire. (5) Application is able to manage patient records and appointments, together with financial and tax registries, and tax collection formularies. **Conclusion:** The proposed psychological records strategy has resulted in a key factor to tackle the barriers raised against recording psychological treatment in medical records, being also a great ally for private practices' management, as clinical psychologists, liked the versatility in handling and scope, such as appointments, registration of clinical records and financial control. The application will be freely available on Microsoft Store for Windows 10 users and in the future on Play Store (Android).

**Keywords:** software; psychology; medical records systems; computerised

### Introduction

Recent advances in healthcare related Information and Communication Technologies (eHealth), have led to many improvements in health processes and services. Professionals are using more technologies in their work, while regulatory bodies are enforcing guidelines for wider use of technologies as well as standardising its usage. According to this, many clinical and management data need to be stored in a manner that allows easy, safe and real time access. In Brazil, starting during the 20<sup>th</sup> Century, many clinical centres began using electronic medical records (EMRs) for psychologists. They had concerns with data security, performance evaluation, goal setting, planning, and new forms of psychological care adoption. From 2009, governmental regulatory bodies enforced the use of psychological records for all professionals (not electronic yet).

To address the concerns and regulatory need an application called "Pronto Fácil" (or "Easy Records") was developed for clinical psychologists. It offers, free of charge, electronic psychological medical records, plus common clinical service management. This paper describes the process for development of the patient data and health service management software app for use on smartphones, tablets and computers of clinical psychologists.

### Methods

Applied technology production was used for software application development and was carried out in five stages:

**Preliminary survey.** The target group was defined as psychotherapists in Porto Alegre (registered with the Regional Council of Psychology of Rio Grande do Sul (CRP-RS), working in the city of Porto Alegre and with training or doing training in psychotherapy). Also, an analysis was carried out regarding the market

share for suitable operating systems and associated devices.

**Target group contact retrieval and pilot research.** A list of clinics-schools for Porto Alegre was obtained from the Regional Council of Psychology of RS (CRP / RS). There were fifteen institutions, with a total of 514 professionals. Of these 280 were randomly selected to participate in the research, and from those 30 were randomly selected to be part of the pilot research. This exceeded the minimum sample size of 220 required to provide 95% reliability, with a margin of error of 5%.

**Pilot research - Definition of basic aspects, and questionnaire development for final research.** Using the data on market share and the results of stage 2, the final version of the questionnaire was developed. Most questions were 'closed', with response bands created according to the most repeated items in the open questions. Also at this stage the programming language to be used and the database to be adopted were defined.

**Initial development, beta testers and final questionnaire.** The working model to be adopted in the application development was defined. Development was begun, and the final questionnaire to be applied to the research sample was prepared. Testers were encouraged to use other applications designed to meet the same needs so they could provide suggestions for improvements. Ten people from the pilot research group volunteered to become "beta testers" (persons designated to test an application, during its development).

**Final version development.** After the adjustments suggested by the team of beta testers, as well as those from the analysis of the results from the questionnaire, the final version of the application was developed, for free distribution.

## Results

The data collected by the questionnaires were stored in a database and analysed using statistical software R, version 3.3.1. As all the variables of the sample were of the categorical type, contingency tables, bar graphs and independence tests were used for analysis.

Through the use of the Net Marketshare website,<sup>1</sup> it was determined that the application would be developed for the Windows operating system because it was the most used in terms of market share (89.8%). This was confirmed by the answers of the participants

to the pilot research. Windows 10 version was chosen, since current users of Windows 7 and 8 would have access to the free upgrade to version 10 prior to the application being ready for market. For mobile devices (smartphones and tablets), the decision was made to use the Android operating system, which held 66% of the world's market. In this way of the application development reached the largest possible market share of potential users.

SQLite was chosen as the database for the application, since it can be used on both Windows devices and Android, or Apple iOS. This was so the data part would be ready for a future evolution of the application. Given the possible evolution of the application to other operating systems, as well as the option for a Windows Universal App, the programming language was defined as being C#, because it provides more fluidity in this portability.

## Discussion

The pilot research confirmed the preference of respondents for the Windows operating system for the computers, but few respondents expressed an interest in using the application on a cell phone. Despite this development continued towards a Windows Universal App which would allow the execution of the same application in computers, tablets and smartphones running Windows 10. The application would therefore be functional for mobile devices, even if this was not a functionality desired by the respondents at this time. Together with selection of SQLite these choices allowed for future evolution of the application to other operating systems.

As a consequence of the pilot research feedback, development of an Android specific version was deferred, avoiding unnecessary financial costs, and speeding development time for the application's final version.

The screen colours and fonts of the letters for the application were defined considering the concepts of usability and design from Alexandre Wollner.<sup>2</sup> A profile of the professional that would use the application was developed based on idealised needs and verified in the pilot research. This constituted the "persona" for targeted development (the persona is the optimal way to describe how an application works for more than one type of user with different needs).

For the development of the application, the methodology of Takeuchi and Nonaka was defined,<sup>3</sup>

combined with the improvement of Jeff Sutherland, known as Scrum, one of the agile methodologies of application development.<sup>4</sup> The application was developed with the purpose of meeting the needs of the "persona" target and tested by the "beta testers" group. The group of "beta testers" pointed out flaws and possibilities for improvement in the application, and helped in this task by comparison with other applications. Screenshots for application version 1.0.0 and version 2.1.0 for smartphones are shown in Figures 1 and 2 below; the desktop version had a similar appearance.



**Figure 1.** Main screen version 1.0.0.



**Figure 2.** Main screen version 2.1.0 running over smartphone.

The research and adjustments suggested by the beta testers allowed Version 1.0.0 to be established. Version 2.1.0 incorporated the latest settings and features, but usability characteristics and the need to adapt to current professional legislation will require constant upgrades to continuously meet the users' needs. These will include user initiatives too.

## Conclusions

The application created for use by Clinical Psychologists allows registration of psychological

services, systematisation of patient schedules, and financial control of these activities. Evaluation showed the “Pronto Fácil” application was ready for market, complying with current legislation and facilitating the professional's performance. This, or other, applications will be a fundamental tool to fight barriers raised against registry of psychological care in medical records, and will be an ally for the management of private practices.

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