

USE OF MOBILE BY COMMUNITY HEALTH WORKERS

USO DE DISPOSITIVO MÓVEL POR AGENTES COMUNITÁRIOS DE SAÚDE

USO DE DISPOSITIVOS MÓVEIS POR AGENTES COMUNITARIOS DE SALUD

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ABSTRACT

Objective: To identify the Brazilian experience in the use of mobile technology in healthcare, aimed at the Community Health Agent. **Method:** an integrative literature review was performed with exploratory characteristic of descriptive on this theme. **Results:** after searching the online search platforms we found 44 articles, after inclusion and exclusion criteria, we used only seven articles. **Conclusion:** In the analysis of the articles, we found two groups, one that addressed software development and another that analyzed the use of mobile devices by Community Health Agents. Thus, it was possible to conclude the feasibility and feasibility of the use of mobile devices by community agents' improvement in the reliability of the health information generated.

Descriptors: Community Health Workers; Mobile Applications; Data Collection.

RESUMO

Objetivo: Identificar a experiência brasileira no uso de tecnologia móvel, na área da saúde, voltada para o Agente Comunitário de Saúde. **Método:** Foi realizada uma revisão integrativa da literatura com característica exploratória do tipo descritiva sobre essa temática. **Resultados:** após busca nas plataformas de pesquisa online foram encontrados 44 artigos, após critérios de inclusão e exclusão utilizamos apenas sete artigos. **Conclusão:** Na análise dos artigos encontramos dois grupos, um que abordou o desenvolvimento de software e, outro que analisou a utilização de dispositivos móveis pelos Agentes Comunitários de Saúde. Assim, foi possível concluir a viabilidade e factibilidade da utilização de dispositivos móveis pelos agentes comunitários de saúde e a melhoria na confiabilidade das informações, em saúde geradas.

Descritores: Agentes Comunitários de Saúde; Aplicativos Móveis; Coleta de Dados.

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RESUMEN

Objetivo: Identificar la experiencia brasileña en el uso de tecnología móvil, en el área de la salud, orientada al Agente Comunitario de Salud. **Método:** Se realizó una revisión integrativa de la literatura con característica exploratoria del tipo descriptiva sobre esa temática. **Resultados:** después de la búsqueda en las plataformas de investigación online se encontraron 44 artículos, después de criterios de inclusión y exclusión utilizamos sólo siete artículos. **Conclusión:** En el análisis de los artículos encontramos dos grupos, uno que abordó el desarrollo de software y otro que analizó la utilización de dispositivos móviles por los Agentes Comunitarios de Salud. Así, fue posible concluir la factibilidad de la utilización de dispositivos móviles por los agentes comunitarios de salud y la mejora en la confiabilidad de las informaciones, en salud generadas.

Descriptores: Agentes Comunitarios de Salud; Aplicaciones Móviles; Recolección de Datos.

INTRODUCTION

The Community Health Worker - CHW (Agente Comunitário de Saúde in portuguese) as we know today comes from a successful health program implemented in the Brazilian state of Ceará. Later, with the implementation of the Family Health Program - FHP (Programa de Saúde da Família in Portuguese) and its expansion to Family Health Strategy - FHS, some concepts such as disease prevention, health promotion, health surveillance and integrality have become principles to guide the work process of the CHW. Here, workers start to develop his/her work in micro-areas, carrying out registration and accompanying families through home visits.¹

Aiming at strengthening preventive care, the Ministry of Health (MS in portuguese) incorporates the Community

Health Workers Program into the Family Health program (FHP), and this strategy broadens and improves the work of CHWs, who starts to count on other health professionals to solve community problems.² Thus, the FHS guides CHWs in the development of his/her initial care activities at the individuals' homes, bringing health information to the community and identifying situations of vulnerability to be passed on to professionals of the health team. This innovation in preventive community health makes this program one of the largest in the world.^{3,4}

This way, CHWs' actions are relevant in the sense that they work as a bond between community and health units⁵, and information is one of the basic requirements for their professional activity - both considering disease prevention and

health promotion.⁶ However, the quality of the information collected by the CHW has been questioned in the literature for a number of reasons, among them we can mention the collection process - which is most often carried out using printed forms that require time for typing and jeopardizes public policies that rely on the quality of such collected information.⁷

These professionals are strategic for data collection since they make daily visits to the families for which they are responsible, what provides them with a unique opportunity to assess the health condition of the population, being able to potentially play different roles in the epidemiological research.⁷ Such process also provides information for organizing health actions. According to the Ministry of Health, up to January 2016 there were 492.854 CHWs in Brazil in 5.507 municipalities⁸ conducting daily home visits.

A favorable environment for the development of m-Health projects can be found if we look at the fast growth of mobile coverage in Brazil. Such projects fall into two categories: health surveillance research (for example, data collection and apps for epidemics control) and patient

information (for example, electronic and personal health records).⁹

E-Health can be defined as the use of information and communication technologies for the provision and improvement of health services, and can be subdivided in mobile health (m-Health). Support to these mobile devices by the population has made it possible to access reliable and customized health information, as well as to collect environmental, biological, behavioral and even emotional data.¹⁰

By taking into account aspects such as mobility and wireless communication, m-Health solutions can effectively improve the quality of health care provided in large centers and bring such care to inaccessible and poorly served areas.⁹ In that sense, the objective of our research was to carry out a literature review on the Brazilian experience of using mobile technology in the health area directed to Community Health Workers. As a guiding question, it was asked whether the use of mobile devices would improve the collection of data by CHWs.

METHOD

This is an integrative literature review, with exploratory descriptive

approach, which intends to group, analyze and synthesize results of other researches on a single topic or question. That would happen in a systematic and ordered manner, with the purpose of strengthening the knowledge about the subject matter. The research question was elaborated as follows: does the use of mobile device facilitate the work performed by Community Health Workers?

Material selection took place from July to September 2016. BVSAALUD and PUBMED platforms were used. Aiming at expanding the research to materials that were not indexed in these platforms, we decided to search *Google Scholar*. The following descriptors (DeCS/MeSH) were used: Agentes Comunitários de Saúde (*Community Health Workers*), PACS (*Community Health Workers Program - CHWP*), Aplicativos Móveis (*Mobile Applications*), Coleta de Dados (*Data Collection*), Saúde Móvel (*m-Health*).

The studies were analyzed according to the inclusion criteria: to be related to the subject matter; to be original papers with full text available in Portuguese and/or

English, and to have been published between 2010 and 2016. As exclusion criteria, we set: incomplete text, not related to the object of study, repeated papers and other revisions.

A total of 44 papers were selected by the descriptors, however, three papers consisted of literature review, four were repeated and 30 were not accepted, after full reading, due to the other exclusion criteria. As a result, seven papers were selected for study, interpretation and construction of the review.

RESULTS

To better identify each selected study, papers were organized in an alphanumerical sequence starting from A1 to A7.

In Table 1 we present information regarding year of publication, titles, journals, objectives and results.

Table 1 – Papers selected for analysis

Paper/ Journal / Year	Objective	Results
P1 ¹² - Mobile application to support the productivity of Community Health Workers (Aplicativo mobile para auxiliar na produtividade dos agentes comunitários de saúde) / ERIPI - Escola Regional de Informática do Piauí / 2015.	To provide an agile and reliable option that facilitates the recording of information collected by CHW	Costs reduction in the process of family follow-up, bringing improvements to health services, in addition to creating a greater reliability of information that can support the decision-making process involving Brazilian public health managers.
P2 ¹³ – Mobile devices' application designed for Community Health Workers (Aplicativo para dispositivos móveis destinados a agentes comunitários de saúde) / ANAIS VI Seminário de Ensino, Pesquisa e Extensão – UNIBAVE. / 2015.	To develop a mobile application for Community Health Workers.	The application offers the exact localization of the families by global positioning system (GPS). Thus, the most serious cases identified in family records can be easily targeted by the health team.
P3 ¹⁴ – Acceptance and use of mobile information technologies by community Health agents of Sapeaçu (Aceitação e uso de tecnologias móveis de informação pelos agentes Comunitários de saúde de Sapeaçu) / Revista Baiana de Saúde Pública / 2017.	To analyze the acceptance and use of mobile information technologies (tablets) by Community Health Workers at Sapeaçu municipality - state of Bahia.	In a universe of 43 Community Health Workers, 23 (53,4%) answered the questions. The main results show that 77% of the CHWs consider that using tablet is very easy; 65% use it daily; 91% are satisfied with such use and 95% would recommend the adoption of such technology.
P4 ¹⁵ – Assessment of health status based on georeferenced indicators (Avaliação da situação de saúde com base em indicadores georreferenciados) / Cad. Saúde Pública / 2013.	To assess whether the use of georeferenced indicators can improve the identification of people health condition.	The study has shown that the use of georeferenced health indicators positively contributes to the working time at Family Health Units (USF in Portuguese). It has also shown that SIAB (Information System for Basic Attention) has not yet reached its goal of being a tool to reorganize work practices. Finally, it was concluded that georeferencing allows a precise characterization and identification of health situations, making planning more efficient.
P5 ¹⁶ – Use of modern technologies for the registration of families from the primary health service at Coari municipality (Utilização de tecnologias modernas para cadastramento das Famílias da atenção básica de saúde do município de Coari) / Revista de educação, ciência e tecnologia do IFAM. 2012.	To create an application for ANDROID that facilitates the registration of families by Community Health Workers	The proposed software contributed to collecting family data, making it more agile, easy and dynamic. Also, it will turn the search for registered families automatic, making it possible to create reports.
P6 ¹⁷ – Mobile application for the Automation and Monitoring of the Primary Health Care System	To integrate information technology systems in the health area and mobile	It is noticeable that the relationship between user and program is quite positive, since results demonstrate a good acceptance of the PHCS program. Finally, it is noticeable that, in general,

(Aplicativo Móvel para Automação e Monitoração do Sistema de Atenção Primária a Saúde) / Cadernos de Informática / 2011.	para ubiquitous computing area. To bring automation to registration and monitoring forms.	the main obstacles found by users are not related to the system itself but to the way of using mobile devices.
P7 ¹⁸ – Colibri project: a data collection and processing platform for the Family Health Program (Projeto Colibri: uma plataforma de coleta e processamento de dados para o Programa de Saúde da Família (PSF)) / Departamento de Ciência da Computação – UFMG / 2010.	To offer a complete solution for collecting and processing data from the Family Health Program (PSF)	The first stage of the Colibri project demonstrated that it is possible and feasible to build an information system for the Family Health Program. A system whose value is: in the organized data - less prone to errors, in the possibility of integration between CHW, FHS and management units and, above all, in shifting the focus of attention from the region to the individual.

By analyzing the findings it was noticed that, in relation to the research method, five papers discussed software development and two papers analyzed aspects regarding the use of these mobile technologies by CHWs. Studies were conducted with a descriptive and quantitative approach.

DISCUSSION

In order to better understand such studies, we decided to organize them in two groups: those dedicated to software development (P1, P2, P5, P6, P7) and those analyzing the use of such devices by CHWs (P3, P4).

In the first group – software development –, it is highlighted the motivations for creating such programs, with emphasis on the importance of the category for public health and the strong acting in data collection. It is also

explained that improvements in data collection will bring information to managers regarding the real health condition in their localities.

Another important contribution to mention is regarding the use of *global positioning system (GPS)*¹⁴, which aims at mapping the health records and identifying the cases that require health service in a more efficient way. Among the works on software development, only this study was dedicated to such possibility.

Therefore, it is possible to list the major contributions by this group: reduction in the cost of family-monitoring; reliability of information and support for decision making by managers¹³; mapping of family records with possible identification of the most serious health cases¹⁴; decreased use of paper for data collection – what makes the process more agile, easy and dynamic¹⁶; possibility of

follow-up at patients' homes¹⁷; demonstration of the feasibility in building a software capable of organizing data collection and that works together with the government Health Information Systems (SIS in Portuguese).¹⁸

The second group – dedicated to the use of mobile devices – expressed concern regarding the ability of CHWs to use mobile devices - and to what extent it would impact data collection. It was noticed that the use of tablets was well accepted by Community Health Workers. We can also highlight the satisfaction and recommendation – by CHWs – of its use in other municipalities, as it proves to be a viable practice.¹⁵

The second group also discussed mapping technology and georeferencing for data collection, analyzing the extent to which this practice would contribute to the health service. The study concluded that georeferencing indicators brought improvements to working time at Health Units, also showing that SIAB (Information System for Basic Attention) has not yet reached the goal of reorganizing work practices at the Health Units; Finally, it was demonstrated that georeferencing enables characterization and identification of health condition in a

more precise way, making it possible to set up a planning directed to the main health actions.¹⁶

CONCLUSION

Based on the review findings, it is possible to think about the possibility of implementing the use of mobile technologies to capture and monitor the health condition of the population. Incorporating technologies that improve Community Health Workers' performance need to be reviewed by the Basic Attention Department (DAB in Portuguese) and by DATASUS.

Undoubtedly, it is possible to infer that the use of mobile devices by Community Health Workers can be viable and feasible, with benefits such as improvements in their working condition and increased reliability of health information - what can directly impact the health actions at the country.

The small number of Brazilian studies on this matter can be considered the main limitation to our research. Therefore, it is possible to acknowledge the needs of this workers category as guides for health actions.

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