

## **NURSES' PERSPECTIVES ON THE USE OF MOBILE APPLICATIONS FOR SELF-CARE IN CHRONIC ILLNESSES**

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### **ABSTRACT**

**Objective:** to analyze the nurses' perspective on the possibility of incorporating the use of mobile applications into their care practice as a strategy for promoting self-care in people with chronic diseases.

**Method:** an exploratory-descriptive study with a qualitative approach. Data were collected between the months of February and March 2023 with 10 nurses who were Master's degree students in Community Nursing in the Family Health Nursing area from a higher education institution in Nursing in Portugal. The data were analyzed using the content analysis technique proposed by Bardin. The MAXQDA software program was used to facilitate and accelerate qualitative data analysis through coding and categorization.

**Results:** the results were organized into two main categories: challenges for managing the therapeutic regimen and self-care; and strategies for promoting self-care in chronic diseases from the perspective of nurses. The challenges during the Covid-19 pandemic generated elements which hinder and facilitate management of the therapeutic regimen and self-care in people with chronic diseases. From the nurses' perspective, the use of mobile applications can facilitate promoting self-care in people with chronic illnesses.

**Conclusion:** chronic disease control heavily depends on people's behaviors and self-management of the disease. The nurses in this study considered that the use of mobile applications can help both healthcare professionals and people with chronic illnesses in promoting health and in the self-care process.

**DESCRIPTORS:** Mobile applications. Self-care. chronic disease. Nursing. Health promotion. Health technologies.

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# PERSPECTIVAS DOS ENFERMEIROS SOBRE O USO DE APLICATIVOS MÓVEIS PARA O AUTOCUIDADO NAS DOENÇAS CRÔNICAS

## RESUMO

**Objetivo:** analisar a perspectiva dos enfermeiros sobre a possibilidade de incorporar na sua prática assistencial a utilização de aplicativos móveis como estratégia para a promoção do autocuidado em pessoas com doenças crônicas.

**Método:** estudo exploratório-descritivo, de abordagem qualitativa. Os dados foram coletados entre os meses de fevereiro e março de 2023, com 10 enfermeiras, alunas do mestrado em Enfermagem Comunitária na área de Enfermagem de Saúde Familiar, de uma instituição de ensino superior em Enfermagem em Portugal. Os dados foram analisados através da técnica de análise de conteúdo proposta por Bardin. Foi utilizado o *software* MAXQDA, para facilitar e acelerar a análise qualitativa de dados através de codificações e categorização.

**Resultados:** os resultados foram organizados em duas principais categorias: Desafios para a gestão do regime terapêutico e do autocuidado; Estratégias para promoção do autocuidado nas doenças crônicas na perspectiva das enfermeiras. Os desafios durante a pandemia de Covid-19 geraram elementos dificultadores e facilitadores para a gestão do regime terapêutico e autocuidado em pessoas com doenças crônicas. Na perspectiva das enfermeiras a utilização dos aplicativos móveis pode facilitar a promoção do autocuidado em pessoas com doenças crônicas.

**Conclusão:** o controle da doença crônica depende fortemente dos comportamentos das pessoas e da autogestão da doença. As enfermeiras deste estudo, consideraram que o uso de aplicativos móveis, podem auxiliar tanto o profissional de saúde quanto a pessoa com doença crônica na promoção da saúde e no processo do autocuidado.

**DESCRITORES:** Aplicativos móveis. Autocuidado. Doença crônica. Enfermagem. Promoção da saúde. Tecnologias em saúde.

# PERSPECTIVAS DE ENFERMERAS SOBRE EL USO DE APLICACIONES MÓVILES PARA EL AUTOCUIDADO EN ENFERMEDADES CRÓNICAS

## RESUMEN

**Objetivo:** analizar la perspectiva de los enfermeros sobre la posibilidad de incorporar el uso de aplicaciones móviles en su práctica de cuidado como estrategia para promover el autocuidado en personas con enfermedades crónicas.

**Método:** estudio exploratorio-descriptivo, con enfoque cualitativo. Los datos fueron recolectados entre los meses de febrero y marzo de 2023, con 10 enfermeros, estudiantes de maestría en Enfermería Comunitaria en el área de Enfermería en Salud de la Familia, de una institución de educación superior en Enfermería en Portugal. Los datos fueron analizados mediante la técnica de análisis de contenido propuesta por Bardin. El software MAXQDA se utilizó para facilitar y acelerar el análisis de datos cualitativos mediante codificación y categorización.

**Resultados:** los resultados fueron organizados en dos categorías principales: Desafíos para el manejo del régimen terapéutico y el autocuidado; Estrategias para promover el autocuidado en enfermedades crónicas desde la perspectiva del enfermero. Los desafíos durante la pandemia de Covid-19 generaron elementos que dificultan y facilitan el manejo del régimen terapéutico y el autocuidado en personas con enfermedades crónicas. Desde la perspectiva de las enfermeras, el uso de aplicaciones móviles puede facilitar la promoción del autocuidado en personas con enfermedades crónicas.

**Conclusión:** el control de las enfermedades crónicas depende en gran medida de los comportamientos de las personas y del autocontrol de la enfermedad. Los enfermeros de este estudio consideraron que el uso de aplicaciones móviles puede ayudar tanto a los profesionales de la salud como a las personas con enfermedades crónicas en la promoción de la salud y en el proceso de autocuidado.

**DESCRITORES:** Aplicaciones móviles. Cuidados personales. enfermedad crónica. Enfermería. Promoción de la salud. Tecnologías sanitarias.

## INTRODUCTION

The Covid-19 pandemic brought several challenges to the production of healthcare. The social isolation period used as a measure to control the spread of SARS-CoV-2 infection caused a shortage of consultations and patient follow-up, which led to worsening of chronic conditions<sup>1</sup>.

Mobile applications became devices for providing information and a complement to self-care for people in social isolation during the pandemic, and were also used by health professionals to support disease management<sup>2</sup>.

The use and development of Information and Communication Technologies (ICTs) has increased in the health area, especially in nursing, which favors organization of the teaching-learning process and increases safety in healthcare<sup>3</sup>.

Integrated into these technologies comes the concept of eHealth or “digital health”, or “electronic health”, which are presented as digital tools and solutions that help improve people’s quality of life<sup>4</sup>. In turn, the concept of mHealth more specifically emerges, also known as mobile health, which refers to clinical practice supported by mobile devices. Mobile health also covers mobile applications (also known as mobile applications or apps), personal digital assistants, smart watches or other body devices or implants<sup>4</sup>.

Technological resources are important allies in care production. Health Education and Communication have strengthened their relationships, as the adoption of care via remote means and/or instant messaging were strategies to ensure rapid decision-making by users, professionals and managers, and technological resources were important allies in care production<sup>5</sup>. Despite the appearance of numerous apps on the market, many of them are not scientifically and clinically validated, which generates distrust and some resistance to their use by both users and health professionals. However, it seems that those which enable interactivity between the user and healthcare professionals are the most sought after<sup>4</sup>. It is then expected that there will be greater adherence to the use of an app when it is the health professional themselves who advises its use.

A scoping review on the use of mobile applications by nurses shows that one of the objectives of using this technology is to track users through health indicators such as physical activity, diet and sleep, constituting a strategy to promote health in primary healthcare environments<sup>6</sup>. It is noteworthy that these indicators are essential for monitoring people with chronic diseases, as they have a direct relationship with style and quality of life.

Chronic non-communicable diseases (NCDs) are responsible for 71% of all deaths worldwide. Cardiovascular diseases contribute to the majority of deaths, followed by cancer, respiratory diseases and diabetes. These four groups of diseases are responsible for more than 80% of all premature deaths from NCDs<sup>7</sup>.

The focus of research on chronic diseases reflects their effect on the health of populations and guides services towards new strategies for health promotion and self-care. Self-care refers to the ability to take care of oneself and is fundamental in the management of chronic diseases, with the purpose of maintaining or promoting health and well-being<sup>8-9</sup>.

Considering these aspects, the objective of this study is to analyze the perspective of nurses on the possibility of incorporating the use of mobile applications into their care practice as a strategy for promoting self-care in people with chronic diseases.

## METHOD

This is an exploratory-descriptive study with a qualitative approach. It was based on the items proposed by the Consolidated criteria for reporting qualitative research (COREQ) to guarantee methodological rigor.

Using a convenience sample, 10 students from the Master's degree in Family Health at the *Escola Superior de Enfermagem do Porto* (ESEP) who met the following inclusion criteria participated in the study: being a nurse, enrolled in the Master's degree course in Family Health, and agreeing to participate in the study by signing the Informed Consent Form.

It was considered that the students of this Master's degree could become privileged informants since they are the professionals who most directly support people with chronic illnesses in their self-care in the context of primary healthcare.

Data production was conducted through a semi-structured interview using a script that consisted of two parts: the first referring to sociodemographic and professional data, and the second consisting of seven questions referring to the use of mobile applications or other technologies such as instruments for managing self-care and therapeutic regimen in chronic diseases. The context questioned reflected both the social isolation period due to the pandemic and difficulty in accessing health services, and the incorporation of these technologies into their daily care production practice. The investigation was submitted and approved by the ESEP Ethics Committee, respecting all international ethical precepts for research with human beings. Participants were coded using N (nurse) and an order number.

In terms of procedures, a detailed presentation of the project was performed during one of the classes of the Master's in Family Health program with the purpose of exposing the intention of the study, its objectives and highlighting the relevance of nurses' participation in the study. The nurses were invited to participate via email and the interviews were scheduled according to the participants' availability, and were conducted via the Zoom online platform.

Before starting the interview, the objectives and justification of the study were recalled. Anonymity was guaranteed and authorization was requested for digitally recording the interviews and signing the Informed Consent Form. A number of interviews was not defined *a priori* because theoretical data saturation was used to close the collection<sup>10</sup>.

All interviews were audio recorded and later transcribed in full. The duration of each interview was an average of 20 minutes and were carried out in February and March 2023.

The narratives were subjected to the categorical thematic content analysis technique strictly following three defined stages: pre-analysis, exploration of the material and processing the data, together with its interpretation and inferences, as recommended by Bardin<sup>11</sup>.

A thorough floating reading of the content of the 10 interviews was performed with the aim of acquiring in-depth knowledge and constituting the specific corpus for the study objective. Exhaustive and detailed readings of the interviews were carried out in the material exploration phase using the semantic approach. Next, the information was fragmented, coded and categorized, aiming for thorough data analysis and interpretation. The MAXQDA software program was used to assist in the analysis, whose main purpose is to facilitate and accelerate qualitative data analysis through coding and categorization.

## RESULTS

Ten nurses participated in the interview, students of the Master's degree in Family Health at the *Escola Superior de Enfermagem do Porto* (ESEP). The participants' ages ranged from 24 to 45 years old; the time spent in the profession ranged from 2 to 22 years. Only one nurse worked in a hospital context, the others worked in Family Health Units in Porto, Portugal. All had experience in caring for people with chronic illnesses.

The analysis of qualitative data enabled constructing two thematic categories: challenges for managing the therapeutic regimen and self-care; and strategies for promoting self-care in chronic diseases from the perspective of nurses.

### Challenges for managing the therapeutic regimen and self-care

This category reflects the nurses' approach to supporting self-care management, specifically the therapeutic regimen for people with chronic illnesses. Two subcategories emerged in this category: difficulty in accessing health services caused by social isolation and autonomy and independence in managing chronic disease.

Social isolation and difficulty in accessing health units were negative aspects that nurses mentioned for the user's management of the therapeutic regimen.: [...] *it was very difficult for them to do this management because there were no face-to-face consultations allowed. In terms of managing the disease itself, it was noted that it became much more out of control, not only because of the unknown of what the pandemic would be and what it could cause and all the stress associated with it* (N1).

The fear, stress and anxiety generated by the Covid-19 pandemic led to worsening and exacerbation of chronic diseases, such as diabetes and hypertension. This situation was heightened by social isolation and restrictions on health services: [...] *there was that initial fear of coming to services by patients with chronic illnesses, they stopped attending appointments for fear of contracting the virus, which may have led to worsening disease control* (N3) and [...] *People's management of their illness became a little careless, there was worsening of the chronic condition, which was common to many of them. This negatively influenced care* (N6).

Another negative aspect generated by fear and insecurity during the Covid-19 pandemic was the role of nurses in supporting the management of the therapeutic regimen and self-care: [...] *generated a huge impact on surveillance consultations and chronic disease management* (N8) and [...] *people with chronic diseases are mostly older adults, making them more vulnerable to worsening their chronic disease and their self-care* (N5).

However, from the perspective of some nurses, social isolation and the difficulty in accessing services meant that people had more autonomy and independence to manage their self-care, which constitutes the second subcategory. According to those interviewed, people sought to know more and take responsibility for their health: [...] *for some people it forced them to have more autonomy, as they had to be less dependent on professionals in their decisions, as they were isolated. Patients had to take a more active role in their self-care* (N3) and [...] *I understand that it has greatly influenced the way people with chronic illnesses take care of themselves. Patients had to find alternative ways to manage their illnesses* (N1).

### Strategies for promoting self-care in chronic diseases from the perspective of nurses

The second category portrays the use of technologies for self-care management in light of the exposed context. Two subcategories emerged in this category: the use of Mhealth (mobile health) resources and support from mobile applications in the management of chronic diseases.

Considering the pandemic situation, several strategies were used by nurses to support users in managing self-care and the therapeutic regimen. Telephone contact and email were some of the alternatives for monitoring people with chronic illnesses: [...] *Here we immediately started doing consultations over the phone. Even though we know that some things were missing, right?* (N9) and [...] *when we made daily contact and recognized people's names and saw the pathology recorded in the file, we also took the opportunity to ask about the issue of monitoring chronic diseases, whether they continued to take their medication* (N10).

These strategies portray the importance of developing the autonomy of people with NCDs; as it was not possible to be present at the nursing consultation, it was necessary for this patient to have the skills to transmit information to the nurse about their health status.

For nurses, the use of technologies such as mobile applications can help promote self-care and therapeutic regimen, which constituted the second subcategory: [...] *it can help a lot, we already have patients with diabetes, with children we had disease management shared with parents, with older adults we have blood glucose measurement; there are two companies that have mobile applications and help, not only in recording blood glucose levels, but also in indicating what to do when it is low, when it is high, have training plans that are updated, diet plan* (N1).

Despite nurses' agreement on the support of mobile applications in promoting self-care, some highlighted that these are more viable for the young population. The majority of people with chronic illnesses cared for by these units are older adults who are more vulnerable and have difficulty handling technologies.: [...] *It very much depends on the target audience, we have a very aged population, so in terms of a mobile application, it would not be for this generation. But it would be very beneficial for more interested people and it would be beneficial to have specific content* (N2); [...] *I think applications are useful and if we learn to work with them when they are created, if there is initial training, I think they are useful* (N10) and [...] *in the specific case of our unit, we have a unit with a very aged population enrolled, 25% or even more of the enrolled population are older adults. This population has low literacy and using the application might not work* (N7).

Another issue raised by nurses regarding the use of mobile applications was the importance of the content of these applications and the possibility of connectivity with health professionals: [...] *physical activity, physical exercise and the food part, the calculation of carbohydrates, composition of dishes, amount of calories to consume at each usual meal of the day, for example, would be much more practical for people who take insulin because they could make an almost direct adjustment to the insulin administered, if there was this carbohydrate count, for example* (N2).

Regarding applications which enable connectivity between the patient and the healthcare professional, the nurses revealed that: [...] *applications which enable connectivity with the healthcare professional would make it easier to monitor patients' health even from a distance* (N9) and [...] *I think it is important that there is connectivity here, but only up to a certain point so as not to give the person a false feeling that they are already being monitored and supervised and that they don't even need to come to the health center. Because this is one of the risks* (N5).

From these testimonies, we can highlight nurses' concerns about these applications being an instrument to assist in self-care management, but which should not interfere with access to health services and nursing consultations.

## DISCUSSION

The data from this study showed that the context of the Covid-19 pandemic highlighted an exacerbation of chronic diseases and influenced management of self-care and the therapeutic regimen.



Social isolation was necessary to reduce the movement of people and therefore reduce the virus transmission. This led to a reduction in users traveling to basic health units and the consequent cancellation of longitudinal follow-up appointments, increasing the validity of prescriptions. People's widespread fear of seeking health services, even when necessary, was a factor in worsening the health situation, especially for people with chronic illnesses<sup>12,13,14</sup>.

The use of mobile applications in the health sector tends to reduce the distance between professionals and patients, contributing to improvements in people's quality of life, in the processes of modernizing procedures, expanding institutions and technical improvement of professionals in the area<sup>15</sup>.

The pandemic brought people closer to technology as many had to use them to communicate due to social isolation<sup>14</sup>. The nurses in this study resorted to non-face-to-face consultations through means such as telephone or emails. They recognized the use of mobile application technologies as a device which can help promote self-care and management autonomy of people with chronic illnesses in managing their illness.

Teleconsultation gained prominence in March 2020 with the Covid-19 pandemic and has been incorporated into nurses' work processes. It is an innovative care form, being considered an innovative technology in care practices based on expanded information and communication technologies (ICT) in health<sup>16</sup>.

Specifically in Brazil, COFEN resolution No. 696/2022 authorized and standardized nursing work in digital health within the scope of the Unified Health System (*Sistema Único de Saúde – SUS*), and in supplementary health. Nursing consultations, a nurse's exclusive activity, can be carried out using ICTs as long as appropriate and safe platforms are used. Furthermore, all actions mediated by ICTs must require the consent of the user involved or their legal guardian and be conducted by their free decision<sup>17</sup>.

In Portugal, the National Health Service (*Serviço Nacional de Saúde – SNS*) already offers a set of varied mobile applications which enable people to intuitively and easily access digital health services, namely their clinical history, scheduling appointments, prices of medications, alarms for taking medications, among other functions. These applications enable faster communication between the SNS and the person, as well as making them responsible for managing their health<sup>4</sup>.

People's autonomy and responsibility for self-care was one of the aspects raised by nurses as something beneficial that was introduced in pandemic. Health promotion aims to seek autonomy at the individual and collective level in order to improve the management of the health-disease process and quality of life. In this sense, self-care for people with chronic illnesses is essential. The user's commitment level to disease management will, in principle, be directly proportional to the care provided by the nurse<sup>18–19</sup>.

It is in this context of interactions that the micropolitics of transformation between access to information, knowledge construction and behavioral changes are inserted, capable of modifying realities based on, for example, adopting healthy habits that modify individual and social vulnerabilities<sup>20</sup>.

Studies show that care produced through digital technologies increases the proportion of patients accessing structured interventions for their self-care, causing a change in behavior regarding health in different contexts<sup>21–23</sup>. Obviously, these technologies must take into account the population's characteristics, namely their age group and digital literacy. In fact, this was an aspect mentioned by the nurses, who expressed their concern about the use of mobile applications in older populations. Other strategies such as phone calls may be more beneficial.

Among the positive points in using these technologies to produce care, we can highlight: professional trust, the interconnection of different health professionals with each other and alignment of certain professionals with the protocols adopted by the health system. However, excessive use may violate the professional code of ethics and addictive behavior may cause harm<sup>22,23,24</sup>.

Health is a resource for life, and in order to reach its potential, training through health education and disseminating information in appropriate language is imperative<sup>18</sup>. It is essential that people know how to manage their health-disease processes in order to achieve a leading role in health. Shared responsibility between the health professional and the patient is an instrument for controlling NCDs.

The emancipatory emphasis on health promotion seeks to enhance the principle of participation, as well as knowledge and information production, in order to value the autonomy of subjects and transform reality<sup>25</sup>.

## CONCLUSION

The COVID-19 pandemic led to a greater lack of control in chronic diseases, either due to the deficit in self-care performed by the person with the disease, or due to the difficulty in providing support from health professionals. However, other solutions have emerged to respond to this situation and other resources appear to be promising for promoting self-care.

Health technologies are devices which help and assist both the healthcare professional and the person with a chronic illness in managing the disease. These are instruments that support care management, however taking into account that care is produced in encounters with others, and technologies should support and not replace a face-to-face consultation.

The context of chronic diseases is related to lifestyles in most cases. From the perspective of the nurses in this study, mobile applications can assist in the disease management process and in promoting self-care, functioning as a complementary strategy. Considering these aspects, it is concluded that it is essential to promote a healthcare culture which creates conditions for people with chronic diseases to mobilize their disease self-management skills so that they can pursue their life path and health, and technologies can be used as support in this process.

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## NOTES

### ORIGIN OF THE ARTICLE

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Data collection: Carvalho SM.

Data analysis and interpretation: Carvalho SM; Sousa MRMGC.

Discussion of results: Carvalho SM, Sousa MRMGC.

Writing and/or critical review of content: Carvalho SM, Sousa MRMGC.

Review and final approval of the final version: Carvalho SM, Sousa MRMGC.

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