



INFORMATION AND COMMUNICATION TECHNOLOGIES USED BY PRIMARY CARE NURSES IN THE COVID-19 PANDEMIC

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ABSTRACT

Objective: to identify the Information and Communication Technologies used by primary health care nurses during the work process against Covid-19. **Method:** exploratory and qualitative study, through semi-structured interviews, with 10 nurses from Primary Health Care, collected in February 2022. Bardin content analysis was used. **Results:** the inclusion of technologies as a tool of complementation and extension to develop the nursing work process in this period was evidenced. The most used technology was WhatsApp, for the purpose of monitoring, guidance and scheduling. **Discussion:** technology allows nurses to develop the work process, favoring health care and communication between professionals and users. However, there are obstacles such as difficulty in accessing quality internet. **Final thoughts:** information technologies constitute as possibilities for nurses to develop their practice. Despite the difficulties in accessing the internet, the use of technologies during the pandemic was present in the routine of all nurses, being used to qualify communication and access to the information needed by the population.

Keywords: Primary health care. Coronavirus. Nursing. Information and communication technologies.

INTRODUCTION

The new coronavirus pandemic, caused by the etiological agent of the family Coronaviridae (Cov), called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), responsible for the disease COVID-19⁽¹⁻³⁾, emerged in 2019, in the city of Wuhan Hubei province in China⁽³⁾, its epidemiological situation rapidly worsened due to the high condition of transmissibility of the virus, the gregarious life of large cities and the lack of vaccines and/ or effective drugs at the time.

The pandemic remained in an uncertain course, overloading an already weakened system and causing many challenges for the Unified Health System (SUS)^(4,5). Primary Health Care

(PHC) through the Family Health Strategy (FHS) is the main gateway for users to the health service, ordering care so that other levels of care are not overcrowded and can manage the demands of more severe cases. Thus, during outbreaks and epidemics, their role is essential to respond to the health demands of the population⁽⁶⁾.

The FHS health team has the nurse as one of the members responsible for providing assistance to users. Through nursing consultation, it is able to develop its knowledge and skills, as well as to promote individual and collective care actions⁽⁷⁾. Faced with a pandemic context, the nurse had the need to remain offering assistance to priority health groups, perform the care, prevention and screening of

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Covid-19 in the assigned areas.

In order to meet these demands, we sought to integrate other technologies to care, among these, highlight the information technologies as possibilities that the professional nurse has to develop their practice. It is understood that Information and Communication Technologies (ICTs) are relevant because they represent mediating and producing tools for health and disease management, and thus can be used to add reliable information to the population^(8,7).

According to the authors⁽⁹⁾, ICTs are a set of integrated technological resources that provide communication in existing processes, that is, means used specifically to gather, distribute and share information. Access to the internet and mobile phone networks is constantly growing, facilitating the process of research on health demands⁽¹⁰⁾.

Among the TICs, the technological tools that most rapidly propagated were smartphones and their applications. One such application is WhatsApp, a tool that allows the exchange of instant messages, photos, videos and voice calls, available for Android and IOS operating systems. Given its popularity, this application has become attractive to the public, gradually growing in the field of health in applications of professional support, health education and care to users⁽¹¹⁻¹³⁾.

Given the above, the current experienced situation exposes a scenario conducive to the use and evolution of ICTs, in conjunction with the work process of nurses, considering that they allow to care for and guide the user at a distance. Thus, it was questioned: what were the ICTs used by nurses in Primary Health Care in the Covid-19 pandemic and their facilities and difficulties? Thus, this study aimed to identify the ICTs used by PHC nurses during the work process against Covid-19.

METHODS

This is a research with a qualitative approach. The study was conducted in five Basic Health Units (BHU) in the city of Pelotas, Rio Grande do Sul (RS), which are Family Health Strategies (FHS). Data were collected in February 2022, through semi-structured interviews. The participants were 10 nurses belonging to the

Primary Health Care network of the City of Pelotas.

The City of Pelotas has 50 BHU, of these, seven were transformed into Sentinel Units, during the years 2020, 2021 and 2022, to serve exclusively individuals with Remaining the others attending the flu syndromes in the morning and maintaining the other attendances and programs in the afternoon shift.

As the municipality is divided into districts, it was decided to include nurses belonging to different districts, and thus composed the sample five BHU and ten nurses.

As a criterion for inclusion of the research participants: to be a nurse and to be working in a basic health unit with Family Health Strategy in the pandemic period of Covid-19. And exclusion criteria: professionals in health certificate, vacation and/ or after two telephone contacts who were not available to participate in the face-to-face interview. Thus, of the 10 nurses eligible for the research, all agreed to participate, with no refusals.

The interviews were scheduled through telephone contact and performed individually at the BHU of each nurse's work. A semi-structured questionnaire containing questions regarding which Information and Communication Technologies (ICTs) were used to provide nursing care was used; how was the planning of nursing care through the use of ICTs; the facilities and difficulties faced in these uses; about how it was to be a nurse during the Covid-19 pandemic; and also an open question so that the nurse could express whatever he wanted regarding the theme.

The interviews were recorded and then transcribed. Data analysis was based on Bardin's precepts. The content analysis had as modality the theme divided into three phases: the pre-analysis, the exploration of the material and the treatment of the results, covering the inference and the interpretation⁽¹⁴⁾.

The pre-analysis is the phase of the organization, which is the choice of documents to be analyzed, resuming the assumptions and the initial objectives of the research. In the exploration phase of the material, there was the operationalization of the codes, decomposition or enumeration, in order to seek the understanding of the text. Finally, the treatment

of the results allowed to establish a table of results, grouping the evidence and the information obtained⁽¹⁴⁾.

To preserve the identity of the research participants, these were identified by the letter (N) of nurse and followed by an Arabic number as indicative of interview order, for example, N1, nurse 1. For the anonymity of the units, used the letter A for the first unit, B for the second and so on, being, therefore, BHU, A-E1 for the first interviewee of the first unit.

For the development of research, guidelines and regulatory standards for research involving human beings were respected. The objectives of the study were explained to the subjects participating in the research, and after positive acceptance, signed the Term of Free and Informed Consent, one way being with the nurse

and another with the researcher.

The project received approval from the Research Ethics Committee of the School of Medicine of the Federal University of Pelotas, under the number of CAEE 5,219,676.

RESULTS

Participated in the research 10 nurses belonging to five BHU, three of them from BHU in co-management with the Catholic University of Pelotas, two nurses from BHU in co-management with the Federal University of Pelotas, and five nurses from BHU management of the City of Pelotas. Of the five BHU, three are located in the urban environment and two in the rural environment. Chart 1 presents the characterization of the interviewed professionals.

Chart 1. Characterization of the nurses participating in the research. Pelotas, RS, 2022.

| Nurse | Age | Origin | Time of Training | Length of service at the FHS (Including the Pandemic Time) | Urban or Rural BHU Performance |
|------------|----------|-------------------------|------------------|--|--------------------------------|
| BHU, A-N1 | 53 years | Três de Maio | 23 years | 6 years | Rural |
| BHU, B-N2 | 53 years | Jaguarão | 33 years | 20 years | Urban |
| BHU, B-N3 | 49 years | Arroio Grande | 27 years | 4 years and 6 months | Urban |
| BHU, C-N4 | 43 years | Pelotas | 10 years | 2 years | Rural |
| BHU, D-N5 | 43 years | Rio Grande | 20 years | 6 years | Urban |
| BHU, D-N6 | 64 years | Pelotas | 30 years | 18 years | Urban |
| BHU, E-N7 | 30 years | Pelotas | 5 years | 2 years | Urban |
| BHU, E-N8 | 45 years | Pelotas | 6 years | 4 years | Urban |
| BHU, E-N9 | 39 years | São Borja | 13 years | 4 years and 8 months | Urban |
| BHU, D-N10 | 47 years | Santa Vitória do Palmar | 25 years | 20 years | Urban |

Source: Created by the authors.

The analysis of the data resulted in categories, according to the content of the interviews: ICTs used by PHC nurses during the Covid-19 pandemic and weaknesses and potentialities regarding the use of ICTs during the practice of nurses in PHC.

ICTs used by PHC nurses during the Covid-19 pandemic

It was identified that the ICTs used by nurses were WhatsApp, landline and mobile phones

(mobile), Google Meet, email, digital spreadsheet, e-SUS, e-SUS Notify, SI-PNI, and teleservice tools, being cited TeleCovid, TeleOrientation and teleconsulting. Internet access in the units was defined by the participants as precarious, since eight reported being insufficient to terrible, and it was necessary for nurses to use their personal accounts to have access to the internet. Table 2 describes the ICTs used by the participating nurses:

Chart 2. Description of the ICTs used by the nurses participating in the research. Pelotas, RS, 2022.

| Nurse | ICT | Access to the Internet | Personal Internet/Unit | Location (Urban/Rural) |
|------------|---|---------------------------|------------------------|------------------------|
| BHU, A-N1 | WhatsApp Landline e-Sus Notifica SI-NIP | Good | Unit/Wi-Fi | Rural |
| BHU, B-N2 | WhatsApp Computer Cell phone (unit) - Call center Landline | Insufficient and unstable | Personal/Unit | Urban |
| BHU, B-N3 | WhatsApp Mobile phone (unit) - TeleCovid Landline e-Sus SI-NIP | Terrible | Personal/Unit | Urban |
| BHU, C-N4 | WhatsApp Landline e-Sus Notifica | Good | Unit/Wi-Fi | Rural |
| BHU, D-N5 | e-Sus Mobile phone (unit) - consulting WhatsApp Google Meet | Unstable and bad | Personal/Unit | Urban |
| BHU, D-N6 | WhatsApp e-Sus e-mail | Unstable | Personal/Unit | Urban |
| BHU, E-N7 | WhatsApp Cell phone (unit) - Call center | Reasonably | Personal/Unit | Urban |
| USB, E-N8 | WhatsApp Computer e-Sus | Reasonably good | Personal/Unit | Urban |
| BHU, E-N9 | e-Sus Computer WhatsApp e-mail | Often works | Personal/Unit | Urban |
| BHU, D-N10 | WhatsApp Computer Digital spreadsheet Google Meet Cell phone (unit) - Teleorientation | Bad | Personal/Unit | Urban |

Source: Created by the authors.

The ICTs most cited by nurses during the interviews were WhatsApp, which was cited by all participants, and this tool was already used previously, but with the intention and purpose of leisure, and during the pandemic, a tool of complementation and extension of the work of nurses. And the telecare, in which five of the 10 nurses reported using for the reception, guidance and necessary referrals.

Weaknesses and strengths regarding the use of ICTs during the practice of nurses in PHC

Regarding the negative implications and difficulties regarding the use of ICTs during the work process of nurses, the placements were

related to the structure of the network, and the management of technology. Here are the reflections:

The difficulties are more evident, because we don't have a structure for the use of information technologies like all of Brazil [...] we didn't have time to organize this part, because all efforts were focused on managing the pandemic in its sense of serving people who use this tool as an opportunity to solve all the family's problems, making excessive use of the tool. And the biggest difficulty is finding time to administer, because it is not foreseen within the work planning (BHU, D-N5).

The network is terrible even for clocking in, it's so bad that I'm very agitated, maybe that's why I like to pick up the landline and call [...] and I think the

difficulty is that of the patient who doesn't have access to anything. The patient who does not have access to the internet, WhatsApp is a difficulty [...] you have to come here and do everything in the old system or you have a cell phone and you don't have WhatsApp, it's not a smartphone (BHU, B-N3).

[...] we have difficulty accessing, there are meetings, a super important online training that the entire nursing team has to stop and then you go to connect and there is no internet this is a bad part of technology everything depends on a good network. We didn't have a sound box on the computers, it has to be on your cell phone, so it depends on the professional having a good device (BHU, D-N10).

It's not the internet, we notice that there is internet, for other things, but it's the system sometimes it doesn't come in. At the beginning of the pandemic, we were told that they were going to send us a cell phone to monitor cases of positive Covid and flu syndrome, because our landline at the unit does not connect to cell phones, but this device never arrived here for us (BHU, C-N4).

It is important to emphasize that the nurses of the present study presented considerations about the facilities facing the use of ICTs. Their speech differs in development and aid, but the use of ICTs potentiated the organization of the work of nurses, as observed in the following statements:

Access to records and organization of information. The paper can get lost, so I think the security not to lose things, the records will not be lost with technology is safer than in the physical right [...] (BHU, B-N2).

[...] appointment scheduling for the patient that used to be in a book has improved, because now it's through the system. [...] the function of the e-sus integrated system plus WhatsApp, I think it made it easier to look for the patient. I think WhatsApp came to help in terms of revenue, which was such a horror, it was not something we did, but it often passed us by and now it has taken away at least that (BHU, B-N3).

Honestly, information technology is easy, because as we are already living in a technological moment of our lives in 2022, we already have this tool with the domain [...]. The view that there are other possibilities, not just the traditional consultation, our routine was somewhat expanded. We manage to offer a little more attention even though it is not within the traditional planning of the units (BHU, D-N5).

Agility is a positive thing. When we were with the doctor from the other BHU online, we talked there and in a little while in the afternoon what I needed

was already solved with bureaucracy, okay, these things that involve referrals in general, these things improve a lot with technology (BHU, D-N10).

DISCUSSION

Through the reports of the nurses participating in the research, the most cited ICT was the use of WhatsApp to carry out follow-ups, guidelines and schedules in special or emergency cases. This data meets other studies⁽¹¹⁻¹³⁾, corroborating that, during the Covid-19 pandemic, the mobile device became a tool to complement and extend the work of nurses.

Accordingly, another tool mentioned was the use of the cell phone, available in the units to perform telecare, being cited the teleCovid, TeleOrientation and teleconsulting, in which five of the 10 nurses reported provide guidance on flu syndromes, as well as scheduling and referrals according to health complaints during care.

According to the World Health Organization (WHO), distance as a critical communication factor leads health professionals to apply ICTs called telemedicine or telehealth among themselves and among professionals and users of the system⁽¹⁵⁾. With the use and advancement of ICTs, telemedicine, self-assessment and the active search of users are aligned to solve problems according to the demand of health needs⁽¹⁶⁾.

In addition, ICTs are being created and developed in the meaning of performing remote care, reporting cases, as well as providing guidance and addressing doubts about the Covid-19 pandemic, advancing knowledge about the use of ICTs, and minimize impacts on the health of the population⁽¹⁷⁾.

Thus, it is noteworthy that ICTs have not been used in Primary Health Care since the Covid-19 pandemic, but there was an increase in their use in this period.

However, despite the progress in the use and greater mastery over ICTs today, there are weaknesses in using information systems, highlighting the unpreparedness of professionals and the slowness in the incorporation of new information technologies, being necessary to recover the organization, permanent education through situations and problems faced by

professionals, and thus contribute to the development of professional skills and competencies during the work process⁽¹⁸⁾.

For the nurses participating in the research, the most prominent weakness regarding the use of ICTs was regarding inadequate or insufficient access to the internet, which is necessary for the use of most of the ICTs mentioned, thus compromising the use of them. Nurses reported having to use their own resources to ensure the maintenance of the use of ICTs, which is a problem that compromises the potential of ICTs in health services.

Studies have shown that the use of ICTs at the primary level has improved in relation to nurses and users, reducing costs, helping the self-management of services and providing significant improvements to the health of the population⁽¹⁹⁾, transformation of work processes in PHC. In addition, with regard to implementation, it reaches users, clinical decision-making and the collective construction of diagnosis in the health territory⁽²⁰⁾.

Corroborating the findings of this research, a study⁽²¹⁾ regarding the influences of information and communication technologies in the work of the Family Health strategy brought results that show the use of ICTs, favoring interaction with various contexts, among these, work between teams, communication between professionals in general, and between teams with the health department, as well as improvement in the speed of information. In addition, another study⁽²²⁾ highlights the relationship between the use of ICTs and the empowerment of nursing practices, through the resignification of actions and services related to primary health care.

Therefore, technology has means by which nurses can develop their work process, favoring

quality health care, communication between professionals and these with users, especially in the period of the Covid-19 pandemic.

FINAL THOUGHTS

The data showed that, during the pandemic, nurses who worked in PHC had to include in their work process the attendances of spontaneous demand linked to flu syndromes, notification of cases, as well as provide guidance and clarification of doubts about the pandemic.

The challenges faced by professionals who worked at the forefront of Covid-19 overlapped the work routine, generating a continuous need to reinvent themselves. Uncertainty about the ways of treating Covid-19, efforts to meet daily demand, as well as the risks of contamination that face-to-face care provided.

In this sense, the ICTs used developed strategies in the care process, facilitating communication between teams, and between the team and users. In addition to strengthening relationships, providing the approach of nurses to the population that was in isolation. Thus, despite the difficulties of access to the internet, information technologies are constituted as possibilities that the nurse professional has to develop their practice.

The study's limitations include the non-inclusion of other Basic Health Units, which would give greater coverage of the results in relation to the existing Units in the Municipality. In addition, it is suggested that research explore the use of ICTs in the post-pandemic context, in order to identify possible learning and propagation of practices acquired in this period, in order to improve them.

TECNOLOGIAS DA INFORMAÇÃO E COMUNICAÇÃO UTILIZADAS POR ENFERMEIROS DA ATENÇÃO PRIMÁRIA NA PANDEMIA DE COVID-19

RESUMO

Objetivo: identificar as Tecnologias da Informação e Comunicação utilizadas por enfermeiros da atenção primária à saúde durante o processo de trabalho frente à Covid-19. **Método:** estudo exploratório e qualitativo, por meio de entrevistas semiestruturadas, com 10 enfermeiros da Atenção Primária à Saúde, coletado em fevereiro de 2022. Utilizou-se a análise de conteúdo de Bardin. **Resultados:** evidenciou-se a inclusão das tecnologias como uma ferramenta de complementação e extensão para desenvolver do processo de trabalho da enfermagem, nesse período. A Tecnologia mais utilizada foi o *WhatsApp*, com a finalidade de realizar monitoramento, orientações e agendamentos. **Discussão:** a tecnologia permite ao enfermeiro desenvolver o processo de trabalho, favorecendo ao cuidado em saúde e à comunicação, entre os profissionais e desses com os usuários. Entretanto, há entraves como dificuldade de acesso à internet de qualidade. **Considerações finais:**

as tecnologias da informação se constituem como possibilidades ao enfermeiro para desenvolver a sua prática. Apesar das dificuldades de acesso à internet, a utilização das tecnologias durante a pandemia esteve presente na rotina de todos os enfermeiros, sendo utilizadas para qualificar a comunicação e o acesso às informações necessárias à população.

Palavras-chave: Atenção primária à saúde. Coronavírus. Enfermagem. Tecnologias da informação e comunicação.

TECNOLOGÍAS DE LA INFORMACIÓN Y COMUNICACIÓN UTILIZADAS POR ENFERMEROS DE ATENCIÓN PRIMARIA EN LA PANDEMIA DE COVID-19

RESUMEN

Objetivo: identificar las Tecnologías de la Información y Comunicación utilizadas por enfermeros de la atención primaria de salud durante el proceso de trabajo frente a Covid-19. **Método:** estudio exploratorio y cualitativo, por medio de entrevistas semiestructuradas, con 10 enfermeros de la Atención Primaria de Salud, recolectado en febrero de 2022. Se utilizó el análisis de contenido de Bardin. **Resultados:** se evidenció la inclusión de las tecnologías como una herramienta de complementación y extensión para desarrollar el proceso de trabajo de enfermería, en ese período. La Tecnología más utilizada fue *WhatsApp*, con la finalidad de realizar monitoreo, orientaciones y planificaciones. **Discusión:** la tecnología permite al enfermero desarrollar el proceso de trabajo, favoreciendo el cuidado en salud y la comunicación, entre los profesionales y de estos con los usuarios. No obstante, existen obstáculos como la dificultad de acceso a Internet de calidad. **Consideraciones finales:** las tecnologías de la información se constituyen como posibilidades al enfermero para desarrollar su práctica. A pesar de las dificultades de acceso a Internet, la utilización de las tecnologías durante la pandemia estuvo presente en la rutina de todos los enfermeros y se utilizó para cualificar la comunicación y el acceso a las informaciones necesarias a la población.

Palabras clave: Atención primaria de salud. Coronavirus. Enfermería. Tecnologías de la información y comunicación.

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