Implementation of COVID-19 telemonitoring: repercussions in Nursing academic training

Implementação do telemonitoramento de COVID-19: repercussões na formação acadêmica em Enfermagem

Implementación del telemonitoreo para COVID-19: repercusiones en la formación académica de Enfermería

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ABSTRACT

Objective: To report the repercussions of implementing the monitoring of suspected and confirmed cases of COVID-19 in Nursing academic training.

Method: A descriptive experience report by 14 students and four professors of a Nursing course located in the South of Brazil, in the monitoring of COVID-19 cases throughout June and August 2020.

Results: Monitoring was performed by phone, and it provided repercussions on academic training in the following dimensions: care, managerial, educational and research; such dimensions fostering teaching-service integration and providing opportunities for the development of work tools that promote access to services and qualification of the nurses' clinical practice.

Final considerations: Monitoring reinforced the importance of the technological and technical-scientific development of nurses, focusing on the use of new devices for monitoring and supporting users, seeking to promote comprehensive health.

Keywords: Nursing. Primary Health Care. Nursing care. Coronavirus infections. Telemonitoring. Pandemics.

RESUMO

Objetivo: Relatar as repercussões da implementação do monitoramento dos casos suspeitos e confirmados de COVID-19 na formação acadêmica em enfermagem.

Método: Relato de experiência, descritivo, vivenciado por 14 discentes e três docentes no telemonitoramento de casos de COVID-19, durante o Estágio Curricular Supervisionado em Enfermagem de uma instituição do Sul do Brasil, ocorrido nos meses de junho a agosto de 2020, em uma sala da universidade.

Resultados: O telemonitoramento aos usuários oportunizou repercussões na formação acadêmica nas dimensões assistencial, gerencial, educativa e investigativa, de modo a fomentar a integração ensino-serviço e oportunizar o desenvolvimento de ferramentas de trabalho que promovam o acesso aos serviços e a qualificação da prática clínica dos enfermeiros.

Considerações finais: O monitoramento repercutiu na importância do desenvolvimento tecnológico e técnico-científico dos futuros enfermeiros, atentando para o uso de dispositivos de acompanhamento e suporte dos usuários na busca pela promoção da saúde integral.

Palavras-chave: Enfermagem. Atenção Primária à Saúde. Cuidados de enfermagem. Infecções por coronavírus. Telemonitoramento. Pandemias.

RESUMEN

Objetivo: Relatar las repercusiones de la implementación del monitoreo de los casos sospechosos y confirmados de COVID-19 en la formación académica de Enfermería.

Método: Informe de experiencia y descriptivo, vivenciado por 14 alumnos y 3 profesores de la carrera de Enfermería de una institución del sur de Brasil, en el monitoreo de casos durante los meses de junio a agosto de 2020.

Resultados: El monitoreo remoto generó repercusiones en la formación académica tanto en las dimensiones asistencial, gerencial, educativa e investigativa, fomentando la integración educación-servicio y el desarrollo de herramientas de trabajo que promuevan el acceso a los servicios y la calificación de la práctica clínica de los enfermeros.

Consideraciones finales: El monitoreo remoto reforzó la importancia del desarrollo tecnológico y técnico-científico de los enfermeros, considerando el uso de nuevos dispositivos de seguimiento y suporte de los usuarios en pos de promover la salud integral.

Palabras clave: Enfermería. Atención primaria de salud. Atención de Enfermería. Infecciones por coronavirus. Telemonitoreo. Pandemias.

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■ INTRODUCTION

The COVID-19 pandemic caused a global health crisis[1], which resulted in difficulties in the epidemiological surveillance actions and in the scheduling of public policies, especially for demanding measures that mitigate inequalities in the access to health and the structural conditions for self-care[2]. Due to its easy and fast transmissibility, this disease implied in the adaptation of technological advances to maintain social distancing and reorganize the provision of services, including teleservice channels to reestablish the relationship between health professionals and users[3].

In this regard, through the COVID-19 Clinical Management Protocol[4], the Ministry of Health (*Ministério da Saúde*, MS) organized an assistance flow that had Primary Health Care (PHC), care coordinator, as its gateway to stratify the severity of the cases of users with flu-like syndrome symptoms, indicating telemonitoring for the purposes of monitoring and evolution of the clinical condition[4]. Telemonitoring guided the Health Care Network (HCN) to act in the timely treatment of the cases in order to mitigate transmission based on the health education of the users and their home contacts, the maintenance of home isolation, and the early identification of possible worsening of the symptoms[5]. Therefore, telemonitoring constitutes itself as a useful tool for efficient care and surveillance practices[6–7].

In this context, the fight against COVID-19 was perceived by higher education institutions of the health courses[8] as an opportunity to change professional training, based on active listening and expanded clinic in the use of information and communication technologies in teaching and research. An example was an institution from southern Brazil that was a pioneer in the region by structuring a service in partnership with the Health Municipal Secretariat (*Secretaria Municipal de Saúde*, SMS) to perform the telemonitoring of COVID-19 cases by professors and students in the last semester of the Nursing Undergraduate Course. This activity had as its motto the work process dimensions in Nursing at PHC, added to the need to reinvent the ways of caring and teaching during this period, foreseeing a new technological horizon to be followed in health care and, consequently, in the nurses' professional training.

In this perspective, this manuscript aims to report the repercussions of implementing the monitoring of suspected and confirmed cases of COVID-19 in Nursing academic training.

■ METHODOLOGY

This is a descriptive experience report by 14 students and three professors during the Supervised Curricular Internship II (*Estágio Curricular Supervisionado* II, ECS II) in the Nursing Course of a teaching institution from southern Brazil, on the performance of the monitoring of suspected and confirmed cases of COVID-19, belonging to five Family Health Centers (FHCs) of the municipality (of a total of 26 FHCs). These FHCs were selected by the SMS for having a high number of COVID-19 cases in their territories, requiring assistance to perform the monitoring according to what is proposed by the MS. Such training activity involved all students enrolled (14) in ECS II and their teacher-supervisors (3), and took place between June and August 2020, from Mondays to Fridays, totaling five hours a day.

It took place in a large room of the University, according to the sanitary measures required in the period (disinfecting mat, hygiene of hands and objects, use of mask, and social distancing). For the activities, there was the aid of a central with six computers and six cell phones to make contacts via telephone calls and/or WhatsApp with the users who needed to be monitored, according to the recommended protocol[4], every 48h (without risk factors) or 24h (risk groups – older adults, patients with cardiovascular diseases, among others) for a minimum period of 14 days from the onset of symptoms until their remission for 72h.

The daily shifts involved a professor and six students, who were divided among the health units according to the number of patients to be contacted that day, and there could be relocation to help other colleagues of other units at the end of the day. Shift rotation contemplated the 14 students throughout the five weekdays, in an intercalated manner, and all of them should fulfill the workload of activities until the end of August. The professors were distributed in an intercalated manner on the weekdays, according to the course's allocated workload. Monitoring was directly supervised by the nurse professors and shared daily with the FHCs' coordinator nurses, who performed an indirect supervision.

It is highlighted that the teleservice was standardized, and Nursing teleconsultation was allowed as a way to fight the pandemic[7]. In this way, it was ensured that the team was qualified as to the guidelines for the management and monitoring of COVID-19 cases recommended by the MS[4] and by the municipality. For this, courses and training sessions on the disease and the information systems used were promoted and constantly updated via direct communication with the SMS.

In addition to that, a script was prepared with questions and guidelines based on these conducts recommended by the health agencies, in order to help and conduct teleappointments and obtain the necessary data about the clinical condition of the users and their home contacts. This approach addressed an emphasis on the worsening of the users' symptoms (such as febrile episodes, dyspnea, extreme fatigue, intense gastrointestinal symptoms), medications in use, compliance with home isolation and, when available, informing the exam results.

For structuring the joint monitoring flow by the team and the FHC, a document was created in Google Spreadsheets and shared via drive containing daily information of the cases monitored: name of the user, registration number, age, risk group, date and symptoms at 1st appointment, date of onset of symptoms, exam collection and results, and follow-up dates of the telemonitoring with the symptoms reported.

The conducts were determined based on the case, with measures of social isolation or prevention of community transmission being reinforced (in cases of discharge from monitoring – asymptomatic for at least 72 hours[4]) and informing the user about the disease, exams and care measures. In cases of persistence or worsening of symptoms, the patients were referred for reassessment in the municipality's reference services.

The monitoring record was performed in the spreadsheet and electronic medical record of the user, in order to ensure care continuity if the patient was assisted in another HCN point of service, in addition to serving as a legal report of the care provided. Thus, the activities were structured based on the central elements of epidemiological surveillance, sanitary measures and public health for the prevention and control of the infection, aspects historically present in Nursing training since its precursor Florence Nightingale.

■ RESULTS AND DISCUSSION

During the period, the team monitored more than 1,400 users, with a daily mean of 80 cases monitored, totaling approximately 3,000 records in medical charts. It was possible to execute, in a pioneering, innovative and satisfactory fashion, actions that are the nurse's duty in the scope of assistance, management, education and research, through information and communication technologies for telemonitoring and, many times, Nursing teleconsultations[7] with an integral focus on the users.

The repercussions reported in this manuscript are verified empirically by the professors, arising from the formative (procedural) assessment of the students and from the informal feedback at closure of the activity carried out orally, individually and in a group of students. Figure 1 presents the repercussions in each dimension of the nurses' work process.

In relation to the care dimension, the clinical competences to assessing the user's health status were developed through data collection with the user and observation of breathing, speech and clinical signs and symptoms. These competences enabled the skill to recognize signs of deterioration in a remote fashion.

The physical absence of the user reinforced the improvement of active listening for the development of the expanded clinic. In this way, it provided the opportunity to develop skills for the identification of psychological and social aspects, such as anxiety and loneliness. By knowing how to listen and interpret the demands considering their context in a comprehensive manner, in addition to the COVID-19 issues, it was possible to provide guidelines directed to the needs and promotion of support in an ethical and responsible fashion, and thus define the activation of the HCN[4].

In addition to that, it provided the opportunity to recognize protocols and clinical guidelines for this pathology, so as to follow the recommended health guidelines. The cases were discussed with the professors, which allowed for a formative assessment of the students in order to promote procedural learning and care coordination together with the PHC units[5].

Regarding the educational dimension, teleservice provided the ability to remotely develop the users' health education about physiopathogenesis, medications, testing and prevention of COVID-19 based on the MS guidelines[4]. The development of communication skills through singular strategies to understand information and clarify the users' questions, such as language use according to the users' context, confirmation of the understanding and opportunity to ask questions, was verified as a positive repercussion of monitoring.

In this regard, an informative folder was elaborated by the professors and students, which was made available to the users if they were interested and had Internet, via WhatsApp or email (through the email created for the monitoring), aiming to fix the prevention guidelines. Consequently, it was observed that the students devised strategies for the management of access to health information remotely to the users.

Another repercussion was the recognition of opportunities to train and direct the users to the efficient search for the health services, in view of professional responsibility and to contribute to minimizing overcrowding of the services in the face of the pandemic. There was constant feedback of acknowledgment from the users via the messaging application
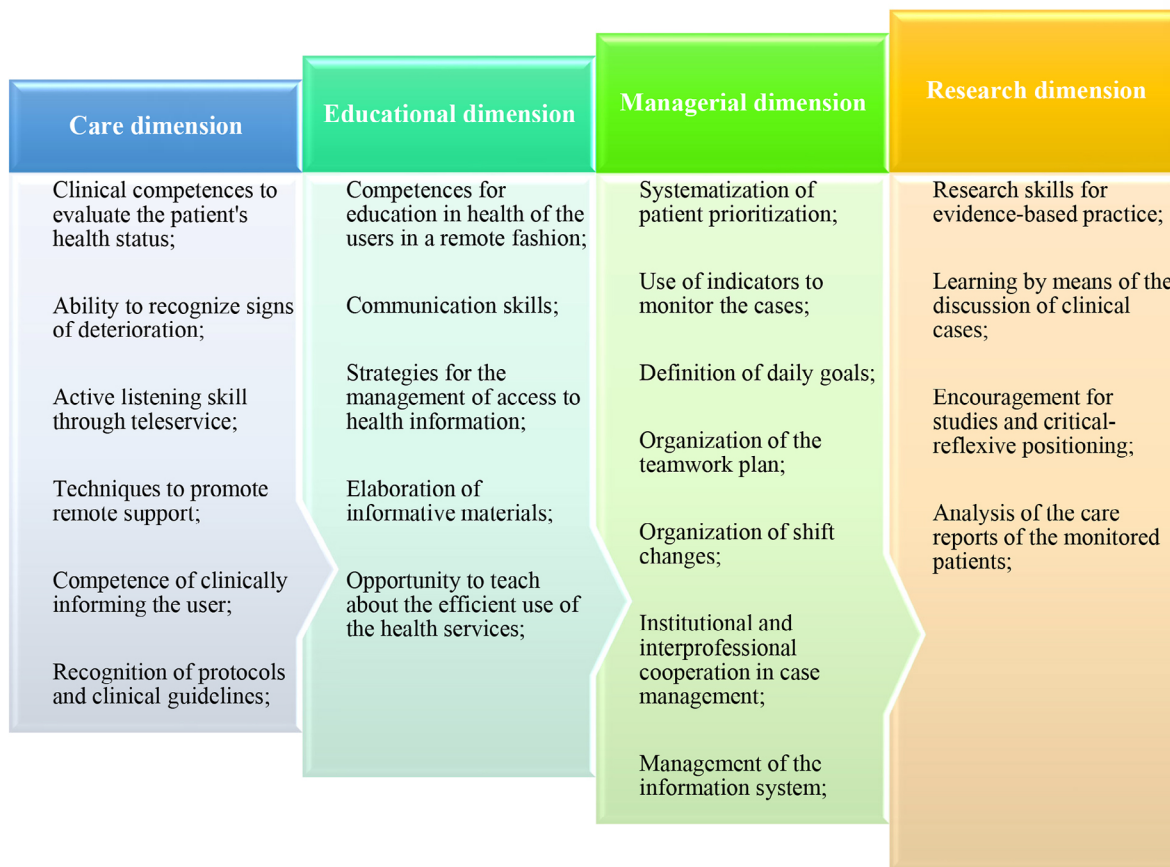
Care dimension	Educational dimension	Managerial dimension	Research dimension
Clinical competences to evaluate the patient's health status;	Competences for education in health of the users in a remote fashion;	Systematization of patient prioritization;	Research skills for evidence-based practice;
Ability to recognize signs of deterioration;	Communication skills;	Use of indicators to monitor the cases;	Learning by means of the discussion of clinical cases;
Active listening skill through teleservice;	Strategies for the management of access to health information;	Definition of daily goals;	Encouragement for studies and critical-reflexive positioning;
Techniques to promote remote support;	Elaboration of informative materials;	Organization of the teamwork plan;	Analysis of the care reports of the monitored patients;
Competence of clinically informing the user;	Opportunity to teach about the efficient use of the health services;	Organization of shift changes;	
Recognition of protocols and clinical guidelines;		Institutional and interprofessional cooperation in case management;	
		Management of the information system;	

Figure 1 – Repercussions of the telemonitoring activity for COVID-19 cases according to the dimensions of the nurses' work process.
Source: The authors, 2021.

or verbally at the end of the telephone contacts, pointing out satisfaction and recognition with the care provided by the students.

Thus, education in health is an essential aspect for the adoption of practices and attitudes aimed at community prevention measures. In order to corroborate this study, other telemonitoring experiences[9–10] pointed this out as a valuable educational intervention strategy in order to strengthen access to information by the PHC users, as well as rating it as a viable tool for the clinical practice.

Regarding the managerial dimension, monitoring enabled learning the systematic of the periodization of users with higher risk of clinical deterioration (either due to the risk factors or symptoms presented), and organization of the daily teamwork plan through the use of spreadsheets and indicators (constantly improved in order to facilitate and accelerate work), the division of tasks and the establishment

of goals for conducting the activity in an efficient way. Management and administration actions influence quality of care and, when well employed, they can direct the provision of humanized and user-centered care[11].

In addition to that, tools were constructed for handoffs among students, professors, and nurses of the FHC, which occurred through written and oral communication, using documents in the drive and messaging applications. This handoff contained important reminders for the following day, with daily updates on the HCN activation demands, discharge from monitoring and/or active searches of users who were not able to be contacted.

It is noted that the management of COVID-19 promoted visibility to the Nursing work, either in the provision or direct or indirect care as managers of the services or as educators and researchers. This joint work with the teams of the municipal HCN interposes the importance of intersectoriality

and interprofessionality[12] in the management of cases in order to ensure quality of care. Teamwork, inherent to the model that guides PHC, presupposes that the professionals operate interprofessionally, strengthening the user as the protagonist and considering their needs in the context of health promotion[12]. It is emphasized that Nursing education requires knowledge, skills and attitudes in the teaching-service-community integration and in interprofessional work, which are currently permeated by the emergence of information and communication technologies that expand the interaction for the provision of care[13].

Thus, telemonitoring had repercussions on the students' skills in the management of the information system, either in the prior consultation of the medical record to support the care that would be provided to the user, or in the registration of the appointment as a form of formal documentation of the care provided. The MS normative[4] points out the importance of medical records and the active search for cases in the community aiming to prevent transmission, both put into practice by the students with the respective health teams, from the beginning of the monitoring until discharge of the patient under monitoring.

In the research dimension, the repercussion was in the elaboration of research skills in relation to the users' clinical conditions and to evidence-based practice. It showed the constant study of students and professors to follow the updates of scientific production on the pathology, diagnoses and treatments. This individual learning was stimulated and shared through the discussion of joint clinical cases during monitoring, but also in the face of opportunities for teaching and evaluative activities organized in four monitoring days distributed over the period. It is highlighted that the information technologies intertwined in the research practices expand the critical-reflective positioning in professional training and in the provision of qualified care[13].

In addition to that, another repercussion is the research skills provided by the analysis of the reports of the monitored cases made possible by the electronic medical record. This analysis made it possible to recognize the profile of the cases monitored and the aspects related to the quantification of the telemonitoring appointments carried out in partnership with PHC.

Thus, the pandemic showed the potential to contribute to the management of digital technologies, research competences, self-management and time planning in university education for problem-solving and decision-making based on the adaptation to new situations in the HCN[14]. The research profile of the nurses has the potential of contributing to the technical-scientific knowledge in the search of innovating solutions in order to develop a qualified and resolute care practice for coping with such pandemics[8].

Thus, the telemonitoring of COVID-19 cases reflected on the need to reinvent Nursing care in PHC, as well as rescuing old research knowledge based on Florence Nightingale and on her contributions in the field of epidemiology and health surveillance[15]. In this dialectic, new work tools are evidenced as potential paths to be followed with the advancement of the frontiers of technological care and dynamization of innovation and health production[15] through a territorialized and community approach[16], which demonstrates the meaning of a strong and capillary PHC in a universal health system[17].

The operational leading role of PHC in the pandemic context, from the union of professionals, managers, and the population, made it possible to conceive a less calamitous horizon[18]. Especially when reinforced by the partnership with education in Nursing[8].

As a limitation of this telemonitoring activity, it is worth recognizing that this is the experience of an institution in a moment of reinvention of its teaching activities, previously carried out in the spaces of the health services and now precluded by the restriction and social distancing measures. Therefore, the outcomes are limited to what was possible to carry out in the period, in view of the number of equipment devices and constant updates of actions to fight against a disease in worldwide recognition.

However, this new form of care can provide students with clinical notions, observation and analysis of the user's health context, based on the exercise of active and qualified listening, and on the implementation of management tools. These aspects need to be managed in order to add distinction to the professional training, considering the period of uncertainties and restrictions, but aiming at nurses who are clinically prepared to work together with society[19].

■ FINAL CONSIDERATIONS

When reporting the repercussions of implementing the monitoring of suspected and confirmed cases of COVID-19 in Nursing academic training, it was possible to recognize the execution, in an innovative and satisfactory way, of the actions that are the nurses' duty in the scope of care, management, education and research, using information technologies to provide assistance in Primary Health Care. Thus, the activities recommended the maintenance of social distancing, but with an integral focus on care for the users, corroborating a differential training of the students involved.

In a pioneering way, work tools were developed together with the Primary Health Care team in an atypical context

of telemonitoring of cases, which, articulated, fostered service-teaching integration and the qualification of the clinical practice of future nurses. Thus, this experience provided new challenges regarding the adaptation and critical-reflective positioning of the students regarding the ways of caring, managing and cooperating interinstitutionally and interprofessionally, as well as in the performance of educational and research activities that required certain agility and search for information in a context permeated by everyday challenges.

The experience exemplifies the potentiality of achieving teaching-service integration and favors the social responsibility of the institutions involved – University and Municipal Health Secretariat – enabling learning and encouraging the development of clinical, managerial and communication skills among those involved through information and communication technologies. In addition to that, it constituted a source of support for the users by mediating the safe and resolute demand for the health services.

The experience of this institution in a moment of reinvention of its teaching activities can stimulate other teaching and research projects that aim at expanding knowledge and the reflection on the advancement of the facets of technological care in Nursing. There are challenges to expand the use of teleconsultations and teleappointments aimed at solidifying them as a complementary way of providing care, which should be explored from the academic training in Nursing.

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