ISSN 2475-529X

Research Article

Journal of Nursing & Healthcare

Nursing Telemedicine and Multipliers Training During the SARS-CoV-2 Pandemic – An Experience Report

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Submitted: 23 May 2022; **Accepted:** 30 May 2022; **Published:** 13 Jun 2022

Citation: *Natália Fernandes Martins Ferreira and Joscelaine Lopes (2022) Nursing Telemedicine and Multipliers Training During the SARS-CoV-2 Pandemic – An Experience Report. Journal of Nursing & Healthcare 7(2): 01- 05.*

Abstract

The worldwide pandemic due to SARS-CoV 2 demanded an exponential increase in intensive care. The deficit between the training of professionals specialized in intensive care and the increase of ICUs exposed the need to expand specialized action in the care of critically ill patients. In this scenario, a tele-ICU project was implemented in two philanthropic hospitals in the metropolitan region of Rio Grande do Sul.

Objective: *The purpose of this article is to report on the experience in implementing telemedicine among nurses and training multipliers during the pandemic resulting from COVID-19.*

Materials & methods: *The nursing telemedicine occurred weekly and lasted around 30 to 50 minutes, focusing on developing the professional in the evaluation of the critically ill patient, electing priorities, as well as in the management and education of the technical team for key elements on the patient's status and the care to be provided. The training of professionals was based on a training matrix developed together with the nursing leadership, listing the main demands for each unit.*

Results/Discussion: *Making the trained professional a multiplier brings responsibility and engagement in replicating the knowledge and, concomitantly, in changing the institutional culture. By developing and implementing the tele-ICU project, it was possible to notice an improvement in the quality of care, reflected in the indicators and the nurses' assessment, as the discussions matured. Furthermore, it was possible to emphasize with the management team the importance of continuing education with a managed matrix to develop critical sense and continuous quality of care even despite the completion of the project.*

Keywords: Nursing education, telemedicine, Intensive Care Unit, 2019-nCov Pandemic

Introduction

The worldwide pandemic due to SARS-CoV 2 demanded an exponential increase in intensive care in Brazil. The country was the third most affected by COVID-19 with more than 30,000 cases and 663,000 deaths [1].

Specialized training brings excellence to health care in high technology units, such as intensive care units. The management of complex cases in ICUs by non-specialized professionals can worsen the critical condition of patients and provide worse outcomes [2].

In this context and with the impossibility of equating the relationship between the scarce supply and the increased demand for specialized professionals, telemedicine has met this need. Conceptualized as a means of interactive audiovisual communication with the objective of assistance, education, and research in health care among health care professionals [3, 4]. Aiming to bring the knowledge of specialized professionals into critical care units that lack specialized teams or have a low density of specialists among the various professions that make up an ICU team.

Moreover, continuing education through training provides op-

portunities for the development of health workers, improving skills and instilling knowledge. It provides protocol updates with scientific evidence, reviews conducts, and optimizes the care provided, perpetuating a continuous quality of care and critical sense in the team [5].

Therefore, the objective of this article is to report on the experience with the implementation and development of nursing telemedicine and continuing education with training of multipliers during the SARS-CoV 2 pandemic.

Materials and Methods

The use of nursing telemedicine and the training of multipliers began in the month of March 2021 to January 2022 in two public Hospitals in the metropolitan region of Rio Grande do Sul, one with a clinical profile (A) and the second, mostly trauma before the pandemic (B).

After three months of implementing the use of telemedicine, a satisfaction survey was conducted with the graduate professionals receiving the consultancy. The questionnaire consists of five sections. The first presents the Informed Consent Form as a mandatory item to follow the subsequent sections. The second, about sociodemographic questions; the third, satisfaction regarding the telemedicine sessions, the fourth related to training, and the fifth section has an open space for suggestions, comments or criticisms. The satisfaction survey was carried out through an online platform. There were 51 respondents, including nurses, physicians and physical therapists. The data presented below were filtered for the nurse respondents who total 20.

The nursing telemedicine aims to develop the professional in the evaluation of the critically ill patient. It takes place once a week with a duration of 30 to 50 minutes. A table is used by the consulting nurses to monitor the discussions held per patient during the week.

The training of the multiprofessional team was based on a matrix customized by hospital and in conjunction with the ICU coordination, electing the priorities. The professionals trained directly by the consultant are multipliers and, therefore, replicate the knowledge to those absent in the training within a period of 15 days. A list is sent with the name of the professionals who were trained by the multipliers, which is the responsibility of the nursing coordinators of each hospital.

Nursing telemedicine

Despite the telemedicine sessions between nurses, the table (Table 01) used to follow the discussions served as a model to develop clinical reasoning for the professionals, as well as a script for their evaluation of the critically ill patient. The table was developed by the nurse consultants with the objective of recording the patient's assessment considering the items:

- Day of discussion, name, age and unit of the patient;
- Ongoing cultures;
- Comorbidities and current case summary;
- Neurological system and evaluation of sedoanalgesia and pupillary pattern;
- Hemodynamics;
- Pulmonary system;
- Diuresis;
- Diet and tolerance, 24-hour glycemias and evacuation;
- Signs of infection;
- Invasive devices and their aspects;
- Tegumental system - prevention and treatment of skin pressure injuries;
- Mobilization;
- Pertinent observations in the case.

Table 01: Tele ICU follow-up table.

Date	Name	Unit	Age	Culture	Comorbidity	Case	Neuro	Hemodynamic	Pulmonar

Diuresis	Diet/HGT/Evacuation	Infeccion	Invasive	Tegumentary System	Mobilization	Note

Source: Table developed by the nurse consultants

Continuous education

The continuing education was based on a customized training matrix for each Hospital's profile and together with the respective ICU nursing coordinations electing the priorities (Tables 02 and 03).

Table 02: Training Matrix developed at Hospital A

Date	Subject	Methodology	Target Audience
13/04	Nursing care in cultural collection	Theoretical and practical	Nurses
22/04	Prone	Theoretical and practical	Multiprofessional team
14/05	Transition of nursing care/checking	Practical	Nursing Technicians
19/05	Hemodynamic monitoring and vital signs control in the critically ill adult	Theoretical	Nurses and Nursing Technicians
01/06	Water balance in the critically ill adult in 24h	Theoretical and practical	Nurses and Nursing Technicians
11/06	Serious Adverse Events	Theoretical	Nurses
21/06	Invasive mean arterial pressure	Theoretical and practical	Nurses
13/07	Hand hygiene dynamics	Practical	Nurses, Nursing Technicians, physicians, and physiotherapist
14/07	Bloodstream infection	Theoretical and practical	Nurses
13/08	Probe fixings review	Practical	Nursing Technicians
19/08	Ventilator-associated pneumonia	Theoretical and practical	Nurses, Nursing Technicians and physioterapist
22/09	Oral hygiene and urinary meatus review	Practical	Nursing Technicians
29/09	Lecture on Management and Leadership for Intensive Care Unit nurses	Theoretical	Nurses
05/10	Field research on care management and nurse leadership	Practical	Nurses
06/11	Bedside educational activities	Practical	Nurses and Nursing Technicians
13/12	Nursing care to the neurocritical patient using external ventricular shunt	Theoretical and practical	Nurses and Nursing Technicians

Table 03: Training Matrix developed at Hospital B

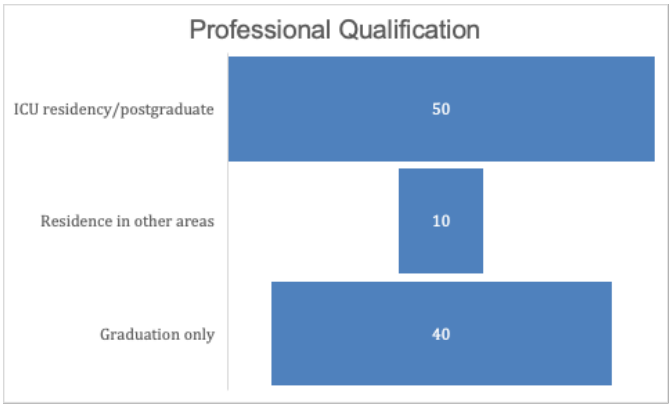
Date	Subject	Methodology	Target Audience
16/4	Importância dos EPI's e Lavagem de mãos	Practical	Nurses, Nursing Technicians
03/5	Water balance in the critically ill adult in 24h	Theoretical	Nurses, Nursing Technicians
19/05	Hemodynamic monitoring and vital signs control in the critically ill adult	Theoretical and practical	Nurses, Nursing Technicians
01/06	Hemodynamic monitoring and vital signs control in the critically ill adult	Theoretical and practical	Nurses, Nursing Technicians
08/6	Drug dilution and drug compatibility	Theoretical	Nurses, Nursing Technicians
16/07	Collection of biological material by puncture	Theoretical and practical	Nurses, Nursing Technicians
10/08	Bloodstream Infection	Theoretical and practical	Nurses, Nursing Technicians
26/08	Cardiorespiratory Arrest Week	Theoretical and practical	Nurses, Nursing Technicians
27/08	Cardiorespiratory Arrest Week	Theoretical and practical	Nurses, Nursing Technicians
30/08	Cardiorespiratory Arrest Week	Theoretical and practical	Nurses, Nursing Technicians
31/08	Cardiorespiratory Arrest Week	Theoretical and practical	Nurses, Nursing Technicians
06/09	Cardiorespiratory Arrest Week	Theoretical and practical	Nurses, Nursing Technicians
27/09 e 09/10	I Organ Donation Symposium - The role of nurses in identifying potential donors	Theoretical	Nurses, Nursing Technicians
02/12	Development and Training on Renal Replacement Therapy	Theoretical and practical	Nurses, Nursing Technicians

The methodology used depended on the subject matter, whether only theoretical or theoretical and practical. The trained professionals are multipliers. In all training sessions, the professional responsible for the reply to the absent ones was present within 15 days with the sending of the list of the trained professionals. Together with the hospital's Infection Control Service, the central venous catheter-related bloodstream infection and ventilator-associated pneumonia protocols were

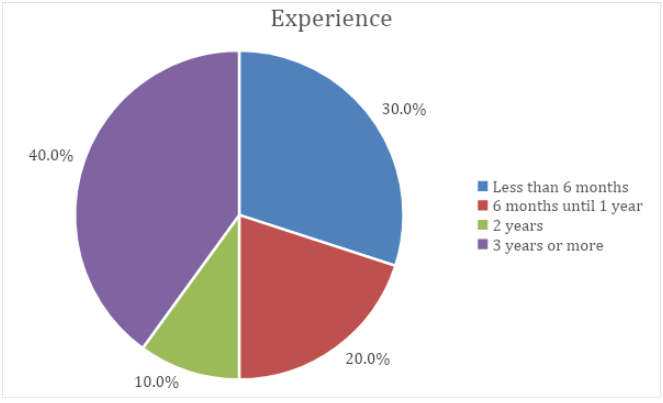
updated. The latter in conjunction with the hospital's physiotherapy service. Both protocols had folders prepared and distributed in the Intensive Care Units.

Results

Regarding the profile of nursing professionals, 25% of the nurses are up to 30 years old, 30% are between 31 and 35 years old, 40% are between 36 and 40 years old, and 20% are older. Despite their education, 40% have only an undergraduate degree (Graph 01). When correlating with the time of experience in Intensive Care Units, 50% have up to one year of experience (Graph 02).



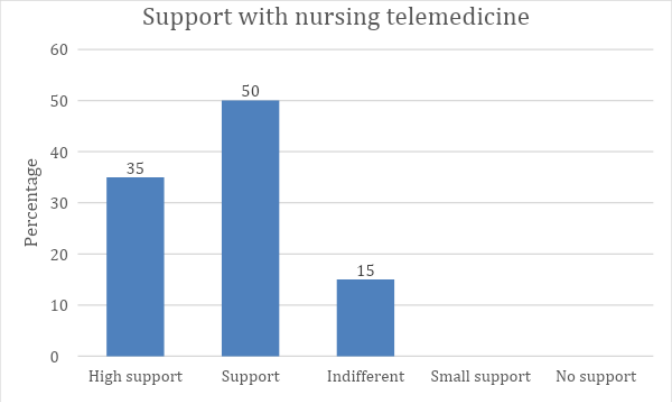
Graph 01: Professional Qualification



Graph 02: Experience em ICU.

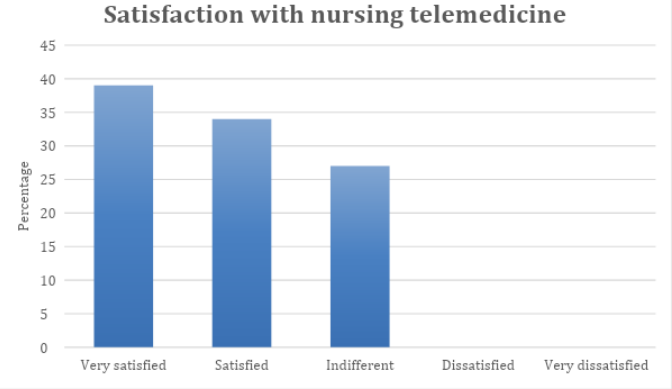
In Hospital A, there was a reduction in the participation of the care nurses in the discussions as of July. This was the same period in which the ICU medical coordination changed and, consequently, there was no continuity in the medical scale, associated with frequent changes of physical space. As a result, from July on, the tele-sessions between nurses evolved to a hybrid modality (face-to-face and online) and then, mostly face-to-face and some specific points discussed online according to demand. In Hospital B, the professionals accessed the sessions from the nursing coordination room and had the participation in some sessions of the ICU coordinator and the nurse manager. The professionals' participation in the telemedicine sessions was continuous.

The perception by the nurses who received the consultancy about the help and support in their evaluation process and evolution of the critically ill patient was 85% reporting support in this aspect. As shown in the graph below.



Graph 03: Support with nursing telemedicine. Graph taken from the satisfaction survey.

It is noteworthy that 73% were satisfied with the methodology used in the sessions (Graph
04).



Graph 04: Satisfaction with nursing telemedicine. Graph taken from the satisfaction survey.

As far as training is concerned, 85% of the professionals considered the methodology and the topics covered to be satisfactory. (Graph 05). It Showed an average of 1 trainingo 20 days.

With percentafe of educated professionals between 90 e 92%. The following protocols were eviemed

It showed an average of 1 training per 20 days.With percentage of educated professionals between 90 and 92%. The following procotolos were reviewed and updated: VAP (ventilator-associated pulmoar), Nursing telemedicine; e por ultimo ss Infecões de trato urinário,

Graph 05: Satisfaction with training. Gradph taken from the satisfaction survey.

Discussion

Continuing education becomes essential due to the lack of experience of newly graduated professionals or the lack of updating of the old ones working in a closed sector of high complexity, impacting on the critically ill patient [4]. During the pandemic resulting from COVID-19, this action became more evident due to the criticality of the care that should be provided associated with the exponential demand for the number of patients and the imbalance in the number of specialized professionals available for this assistance.

The institutional culture of educational activities based on a customized training matrix with the needs of the sector opportunizes professional development and care updates, promoting care safety and better patient outcome [5, 6, 7].

Souza et al, 2019 points out the use of telemedicine among nurses as a recent activity and needs training in technological resources and their insertion starting from graduation. It is a resource for continued training of professionals in various areas, providing the exchange with specialists. The satisfaction of professionals regarding the sessions is in line with the experience of students in the study by Reierson et al, 2015, demonstrating the relevance of the topic and the development of skills that is essential for future nursing professionals [8].

In Hospital A there was the challenge of reorganizing the work processes of health professionals to adapt and insert themselves into the new technology. This challenge has already been cited by Maldonado JMSV et al, 2016 Souza et al, 2019. There was a difference in the process of maturation and professional growth when comparing the two Hospitals [9, 10].

The relevance and dissemination of telehealth in Brazil made it possible in the context of the pandemic arising from COVID -19 to be used as a resource and means for knowledge exchange in the care of the critically ill patient, contributing to the professional development of the assistant nurse and associated with continuing education, promoted the improvement of the quality of the service provided [10].

Acknowledgement

To the team that participated and developed the project together: Diego Leite Silva Nunes, Melina Loreto and Vinicio Piccoli; to the two hospitals that participated and answered the satisfaction survey and the team that supported the project throughout its development Fabricio Fonseca, André Wajner and Gisele Piccoli.

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