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ELMOTHERAPY: REALISTIC SIMULATION AS A HEALTH EDUCATION TOOL

ELMOTERAPIA: SIMULAÇÃO REALÍSTICA COMO FERRAMENTA DE ENSINO EM SAÚDE

ELMOTERAPIA: SIMULACIÓN REALISTA COMO HERRAMIENTA DE EDUCACIÓN PARA LA SALUD

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ABSTRACT

The general objective of this report is to share the experience of Ceará School of Public Health educators in the transmission, at the bedside, of the proper management of a new device for non-invasive ventilation – Helmet ELMO 1.0 –, through the said active methodology Realistic simulation with debriefing. The training qualified nurses, doctors, physiotherapists and clinical engineers and took place between December 2020 and July 2021, training more than 1000 professionals from Ceará and other states, as well as Mercosur countries. Based on the speeches of the trained professionals, the realistic simulation with debriefing promoted: knowledge of the new technology, skills training and attitudinal assessment for the practice of Elmotherapy and reached the following learning pillars: care excellence, safety centered on person, interdisciplinarity and sustainability. As a positive externality, we can mention the continuous and collaborative construction of a community of practices formed by trained health professionals.

Descriptors: *Non-invasive Ventilation; Technology; Health Education; COVID-19; Realistic Simulation.*

RESUMO

O objetivo geral deste relato é compartilhar a experiência de educadores da Escola de Saúde Pública do Ceará na transmissão, à beira leito, do manejo adequado do novo dispositivo para ventilação não invasiva – Capacete ELMO 1.0 –, através da metodologia ativa dita simulação realística com *debriefing*. Os treinamentos habilitaram enfermeiros, médicos, fisioterapeutas e engenheiros clínicos e ocorreram entre dezembro de 2020 e julho de 2021, capacitando mais de 1000 profissionais do Ceará e de outros estados, até de países do Mercosul. Embasada pelas falas dos profissionais treinados, a simulação realística com *debriefing* promoveu: conhecimento da nova tecnologia, treinamento de habilidades e avaliação atitudinal para a práxis da Elmoterapia e alcançou os seguintes pilares de aprendizagem: excelência do cuidado, segurança centrada na pessoa, interdisciplinaridade e sustentabilidade. Como externalidade positiva, podemos citar a construção contínua e colaborativa de uma comunidade de práticas formada pelos profissionais de saúde treinados.

Descritores: *Ventilação Não Invasiva; Tecnologia; Educação em Saúde; COVID-19; Simulação Realística.*

RESUMEN

El objetivo general de este informe es compartir la experiencia de los educadores de la Escuela de Salud Pública de Ceará en la transmisión, a pie de cama, del manejo adecuado de un nuevo dispositivo de ventilación no invasiva - Casco ELMO 1.0 -, a través de la metodología activa denominada Simulación Realista con *debriefing*. La formación de enfermeras, médicos, fisioterapeutas e ingenieros clínicos titulados se llevó a cabo entre diciembre de 2020 y julio de 2021, formando a más de 1000 profesionales de Ceará y otros estados, así como de países del Mercosur. A partir de los discursos de los profesionales capacitados, se promovió la simulación realista con *debriefing*: conocimiento de la nueva tecnología, formación de habilidades y evaluación actitudinal para la práctica de la Elmoterapia y se alcanzaron los siguientes pilares de aprendizaje: excelencia en el cuidado, seguridad centrada en la en persona, interdisciplinariedad y sostenibilidad. Como externalidad positiva, podemos mencionar la construcción continua y colaborativa de una comunidad de prácticas formada por profesionales de la salud capacitados.

Descriptores: *Ventilación no Invasiva; Tecnología; Educación para la Salud. COVID-19; Simulación Realista.*

INTRODUCION

The new coronavirus has aggravated the world scenario in all aspects of daily life[1], challenging, above all, educational practice and instigating new teaching, research and assistance strategies in the health area[2].

Adjustments in clinical and educational environments were mandatory in order to maintain excellence in care and person-centered safety while coping with COVID-19[3]. In view of this, a technological innovation from Ceará has gained prominence since the end of the first wave of the pandemic by SARS-CoV-2, reverberating internationally for the treatment of people with Severe Acute Respiratory Syndrome by COVID-19: the Elmo 1.0 helmet (ELMO).

The ELMO is a safe Non-Invasive Ventilation (NIV) interface, which aims to provide oxygen at an adequate and defined pressure around the face, enabling the improvement of the hypoxemic condition and can be used outside intensive environments for the treatment of victims of COVID-194. This was conceived by a pulmonologist who coordinated an interprofessional health and clinical engineering team, being manufactured and produced in scale by the public-private initiative.

Faced with a new technology, it became necessary to train health professionals who worked on the front lines of COVID-195. Thus, it is essential to think about education and teaching strategies in health, in order to offer training and qualify professionals for quality care using the ELMO device.

From this, the Training Program for the management of ELMO was made available by the School of Health of Ceará Dr. Paulo Marcelo Martins Rodrigues (ESP/CE), an autarchy linked to the State Health Department (SESA), which has stood out for 28 years in the training of health professionals[6].

The organization was in charge of the Educational Development Center (CEDES) of ESP/CE, which believed in Realistic Simulation as an effective and safe educational environment for technical-behavioral practices to develop the skills necessary to handle the new device.

This experience report exposes the innovative strategies of permanent education - soft technologies, as a means for the new health care technologies to significantly reach health professionals in the front line of care for people with COVID-19, from the perspective of managers and educators.

Based on this premise, this study brings, as a scientific justification and social relevance, the maintenance of professional quality of a longitudinal nature as a care strategy in higher education, with an emphasis on patient safety. It also emphasizes interprofessional communication and access to innovation mechanisms in health with guaranteed training on the correct use of technology and its applicability – Elmoterapia.

METHODS

The training took place through workshops at the Realistic Simulation Center, located in the annex of the Public Health School of Ceará in Fortaleza, Ceará, from December 2020 to July 2021.

STEP-BY-STEP DESCRIPTION OF REALISTIC SIMULATION

The workshop lasted three to four hours, in the morning and/or afternoon, offered with prior appointment. For better use, it was divided into three stages: 1) Start, with institutional video developed by researchers working in clinical practice with theoretical information and assembly of the ELMO device. After the presentation of a 17-minute instructional video about the equipment and indication and contraindication criteria, the practical part was followed. 2) In the second moment, in an environment suitable for the simulation laboratory, the ELMO was presented in 3 (three) stations. The instructor demonstrated the micro-skills to be developed and, in sequence, the professionals in training practiced individually, under supervision.

The first 2 (two) involved assembly/disassembly and appropriate criteria for disinfection of the equipment, following the Instruction Manual. 3) The last station was the simulation itself. Pairs of participants performed the placement and removal of the ELMO on the actor, in different clinical contexts. Work was done not only on solving the problem-situation, but on the interdisciplinary care required by Elmotherapy (macro-skills). Through a checklist, the instructor evaluated from the initial contact with the hospital environment, the approach to the patient, the explanation of the equipment, the testing before application and the behavior in the situations.

When all participants completed this activity, they were referred to the third stage: they commented on their experiences, highlighting strengths and areas for improvement, and individually filled out the reaction assessment6. From this debriefing, they could access the Virtual Learning Environment (AVA), becoming multipliers or focal points.

As an essential part of this experiential research, the technique that guided the subsequent discussion was the realistic simulation strategy with

debriefing, supporting qualitative elements for the analysis of the training process for both facilitators and professionals in training.

At the end of the workshop, the participant filled out a form with an evaluation of the training, guaranteeing their insertion in the Virtual Learning Environment (AVA) and the continuity of the training update.

RESULTS

In the second half of 2020, the ESP/CE team of researchers, managers and educators, consisting of physiotherapists, doctors and nurses (n=10), qualified in the subject and then moved to another stage: elaboration of educational methodologies from the perspective of education, technology and innovation. In addition to the technical staff of instructors (n=12), the work team was also part of the "Elmotherapy" training team, actors for realistic simulation (n=2), IT technicians (n=3) and operational administrative staff (n =2).

The training took place over six months, qualifying more than 1,000 health professionals, including nurses, physiotherapists, physicians and clinical engineers, involved in assistance in the pandemic scenario for handling the ELMO.

These participating professionals completed their training with the responsibility to become multipliers in their professional practice spaces and, in this way, replicate the learning to other professionals who work on the front lines in the fight against COVID-19.

The technical-behavioral skills were divided into stages: 1) discussion of theoretical content about the functioning of the ELMO; 2) application of the device and the skills professionals need to develop; 3) the practice of handling the equipment during the experienced clinical case; 4) time to exchange experiences in group (debriefing).

Professionals were unanimous in reporting a better assimilation of their practice with the stimulus of micro and macro skills. The manuality and approach to the action enabled the fear of making mistakes and experiencing doubt, strengthening the understanding of the use of the ELMO, its indications, contraindications and also situations of failure and adversity for the use of the equipment.

The simulation space was the moment to train and answer questions, based on the clinical cases, including the integration of teams in the application process and the multidisciplinary look exalting each category, which already brought prior knowledge to approach the patient-actor.

During the debriefing, the instructors' perception of the students' autonomy and proactivity in conducting interdisciplinary situations is highlighted, with care excellence and patient safety prevailing. Through qualified listening, the participants brought up the need to expand training to other categories, such as nursing technicians, speech therapists, psychologists and social workers.

DISCUSSION

In the Realistic Simulation Center of ESP/CE, the infrastructure allows an environment of practice scenarios, according to the educational needs raised, aiming to achieve multiple learning objectives – knowledge, skills and attitudes, maximizing the impact of competence-based training[7].

Realistic Simulation was the innovative educational strategy chosen to support the transfer of ELMO usability, from the laboratory to the bedside, while simultaneously aligning teaching, care, research and management, through self-performance and the collaborative and continuous construction of new knowledge around the Elmotherapy.

The last moment - debriefing, rapport, comment, feedback, evidenced the perception of significant learning over the six months of educational intervention on the effectiveness and safety of the interdisciplinary dynamics of interaction, and the discursive/reflective exchange of experiences between participants and teachers , providing a 360º8 rating.

Elmotherapy, through realistic simulation with debriefing, went beyond the mere recognition and management of the Severe Acute Respiratory Syndrome (SRAG) associated with COVID-19 and the correct technical use of the ELMO. The facilitators dared to transfer disruptive concepts of Continuing Education in Health with the continuous excellence of care, person-centered safety, interdisciplinarity, sustainability and even achieved positive externalities, such as: the construction and sharing of a community of practices that aroused new possibilities of use for the equipment.

The COVID-19 pandemic highlighted the urgent need to combine the innovation of hard technologies with changes in teaching strategies, valuing active educational methodologies to properly guide their handling by hundreds of health professionals in a record time of six months, qualified to become up multipliers in practice fields.

In addition to the expansion of new indications for post-pandemic equipment, it is commendable that professional categories keep their training in Elmotherapy, as it is a new technology in care networks.

It is expected to continue the usability and training of this type of oxygen therapy management, based on the principles of permanent education with safety and success, according to the demand for health in Ceará and Brazil, which reinforces the need for interdisciplinary research on priority problems of public health[9], with the aim of highlighting the access and reduction of inequalities with social and sustainable responsibility.

FINAL CONSIDERATIONS

It is considered that the COVID-19 pandemic highlights the need to unite technology and innovation for health professionals, with continuing education strategies for clinical management in the treatment of the hypoxemic syndrome caused by the new coronavirus.

The support and the teaching method using realistic simulation brought the possibility of training professionals from an interprofessional perspective, while this approach assures the professional and values patient safety.

In practice, the innovation of realistic simulation training was applied to the Distance Education (EAD) modality, making the Public Health School of Ceará a pioneer in this modality for the use of the Non-Invasive Ventilation (ELMO) device in the training of professionals of health.

However, even though it is not the focus of this research itself, further studies on health education are essential to mitigate, above all, possible limitations regarding the notes and data on the level of functional literacy directly linked to the equipment interface and the simulation in the training of the Health professional.

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