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**SIMPÓSIO  
LUSO BRASILEIRO  
– INOVAÇÕES E TECNOLOGIAS  
EM SAÚDE**

## **Apresentação dos Anais do Simpósio Luso Brasileiro – Inovações e tecnologias em Saúde**

O Simpósio Luso Brasileiro – Inovações e tecnologias em Saúde foi realizado nos dias 3 e 4 de maio 2023 de forma híbrida (presencial e com transmissão). O evento contou com palestrantes brasileiros convidados pela comissão organizadora da Faculdade de Ciências Médicas de Minas Gerais e portugueses convidados pela comissão organizadora da Escola de Ensino Superior de Santa Maria. Foram realizadas mesas redondas que permitiram o debate entre os presentes. Participaram do evento estudantes de diferentes cursos da área da saúde.

Tendo em vista o tema central do evento (Inovações e tecnologias em Saúde), os palestrantes trouxeram as novas tecnologias e ações inovadoras na saúde de acordo com suas vivências e áreas de expertise. Ainda, alguns dos trabalhos submetidos para o evento e que tinham afinidade com o tema central foram selecionados para apresentação oral ou transmissão de vídeo.

A publicação dos Anais do Simpósio Luso Brasileiro – Inovações e tecnologias em Saúde permite ampliar a divulgação dos trabalhos desenvolvidos e apresentados no evento para toda comunidade. Espera-se que esses resumos publicados possam servir de inspiração para que os alunos, docentes e profissionais da saúde possam cada vez mais trabalhar de forma inovadora e criativa em suas áreas de atuação.

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**Comissão Organizadora do Evento**

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ORIGINAL STUDY

## The use of technology as a communication tool in the consultation of the elderly

*O uso da tecnologia como instrumento de comunicação na consulta do idoso*

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### ABSTRACT

**Introduction:** The aging of the Brazilian population is a concern and demands a solution to these specific problems. In this demographic transition, the elderly individual is more active and independent for their commitments, attending health services unaccompanied. With more demands, there is pressure on health systems to introduce new technologies and enhance communication relationships between health professionals, the elderly and their families. **Objective:** To present a prototype of a communication system that favors the management of shared care in the elderly health. **Method:** This is a descriptive research that presents the necessary steps to build a prototype that includes planning, literature search, prototyping and final application. **Results:** The low fidelity prototype was created using the software Adobe XD by creating a simple and intuitive interface design. Application actions were defined: investigation of lifestyle habits and risk factors; sharing of health status; and notification regarding exams, procedures, referrals and care. Such functions can be accessed by the professional, elderly or caregiver, to exchange the health care. To ensure accessibility for the target audience, the visual choices were based on semiotics and color theories. **Conclusion:** The tool showed aesthetic potential for the functions and can impact communication within the health of the elderly, making communication between the health team and the elderly and caregivers more effective.

**Key words:** Consultation of the elderly; Communication; Transversality; Simple technologies; Complex technologies.

## ORIGINAL STUDY

# Life in your hands: cardiopulmonary resuscitation flowchart aimed to saving lives

*A vida em nossas mãos: fluxograma de reanimação cardiopulmonar direcionado para salvar vidas*

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## ABSTRACT

**Introduction:** Among the life-threatening emergencies, cardiorespiratory arrest is one of the most feared, because the chance of survival is related to quick service, with effectiveness and quality. Attending a cardiorespiratory arrest is divided into Basic Life Support (BLS) and Advanced Cardiovascular Life Support (ACLS). High-performance teams are key to minimizing damage to victims in cardiorespiratory arrest, and the educational process is a primary strategy for aligning the stages of both BLS and ACLS. **Objective:** To evaluate the preparation of students of health courses for victim care in cardiorespiratory arrest from an educational game called “Life in Your Hands”. **Method:** Original work describing the construction of a prototype question-and-answer game consisting of 25 questions, according to strategies of active teaching and learning methodologies, carried out by students of the sixth period of the undergraduate nursing course in the city of Belo Horizonte. The construction of the game followed three stages: idealization and construction, application and validation. The validation process of the educational resource built in relation to: language, appearance, Structure and understanding of the game, obtaining knowledge, acquiring effective learning and gaining more knowledge about patient care in cardiorespiratory arrest. **Results:** The prototype of the game was applied to 3 students. After application of the pilot game it was possible to detect that 66.7% understood about medications and maneuvers needed during cardiopulmonary resuscitation; 66.6% were wrong about the correct sequence between “chest compression” and “breathing”; 100% did not know about the importance of capnography. **Conclusion:** The gamification of educational actions is an opportunity to give softness to the teaching of complex subjects and enhance knowledge. The effectiveness of this proposal is a prerequisite for protagonism in the professional training process, promoting continuing education regarding the aspects inherent to CRP care.

**Key words:** Cardiorespiratory arrest; Health Professionals; Patient.

ORIGINAL STUDY

## Disasters and their consequences on health: construction of the prototype “S.O.S. FLOOD”

*Desastres e suas consequências para a saúde: construção de um protótipo “S.O.S. enchente”*

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### ABSTRACT

**Introduction:** The demographic growth, influenced by the urbanization process, has increased the rates of flooding in urban areas. This situation comes from environmental imbalances caused by development of cities, such as the growth of soil sealing, a preponderant factor in the decrease of water infiltration in the land, transforming the environment into a vulnerable ecosystem and enabling the occurrence of disasters and floods.

**Objective:** To report the experience of building a prototype application to help the inhabitants of flood-prone regions with basic first aid knowledge and health education topics. **Method:** This is an experience report based on the proposal of an interdisciplinary work in undergraduate nursing courses at a private Higher Education Institution located in Belo Horizonte (MG). The students were responsible for developing an educational strategy and providing first aid care to urban populations in flood risk areas. The first stage carried out was the search for studies related to the central theme, followed by the development of the prototype of the application called “S.O.S. FLOOD” on the digital graphic arts platform. **Results:** The prototype elaborated contemplates: initial page (login screen), followed by the emergency call sections, local help points, map of the region and basic first aid teachings. It also has categories of emergency numbers and a specific place for clarifying doubts. The proposal contemplates creativity, health practices, and technological innovation. **Conclusion:** The experience lived by the students in the execution of the application model favored the construction of a tool that promotes health by sharing first aid fundamentals, which, like the other information made available, if correctly implemented, have the potential to save lives in emergencies.

**Key words:** Natural disasters; Floods; Mobile applications; First aid.

## REVIEW STUDY

# Benefits and challenges of using realistic simulation for teaching and learning in nursing course: an integrative review

*Benefícios e desafios da utilização da simulação realística para o ensino-aprendizagem em cursos de enfermagem: uma revisão integrativa*

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## ABSTRACT

**Introduction:** The use of realistic simulation in the teaching/learning process proved to be an effective method in the training process of academic students in the health area, however, it is necessary to describe with more specificity what are the gains obtained with this practice. **Objective:** To identify in the literature the benefits of simulation as a teaching methodology in nursing education. **Method:** This is a Literature Review with publications from 2018 to 2023 under the descriptors of education in nursing and simulation and having as a guide question the following: *what are the benefits of using simulation for teaching and learning in Nursing?* Databases were Nursing Database (BDENF), Latin American and Caribbean Literature in Health Sciences (LILACS), Virtual Health Library (BVS) and Public Medline or Publisher Medline (PUBMED). **Results:** 63 studies were found, published in Portuguese, Spanish and English languages. After dynamic reading of abstracts, those, which did not cope with the use of simulation, were excluded, totaling 30 articles. In the data analysis, it was observed that the simulation is used for the development of several skills and abilities, being effective for the qualification of professional ones in training. It is observed that the development of clinical reasoning and decision-making is a differential of this teaching-learning methodology. Although, some studies indicate that use of simulation is associated with high levels of stress for the student. Furthermore, the construction of realistic scenarios is still a distant reality for many college education institutions, due to the high maintenance cost, unavailability of space and shortage of trained professionals to use the technique. **Conclusion:** The use of simulation in nursing teaching presents itself as a powerful teaching methodology, inserting the future professional in situations which are closer to reality in a safe way, that enables greater autonomy when in real scenarios of action.

**Key words:** Nursing education, Simulation, Nursing.

## ORIGINAL STUDY

# Use of a prototype in the optimization of home care services by nurses

*Uso de protótipo na otimização de serviços de assistência domiciliar por enfermeiros*

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## ABSTRACT

**Introduction:** Digital tools are part of everyday life and in the health area, technology brings benefits to health professionals and patients, optimizing processes. **Objective:** To describe the experience of building an online service delivery platform for managing nursing care in-home care services. **Methods:** This is a descriptive study that aims to present the construction of a Web platform for managing the provision of nursing care at home. This original work was presented at the exhibition of health technologies at Faculdade de Ciências Médicas de Minas Gerais. The construction of the Web platform went through three stages: bibliographical survey to add scientific knowledge, creative process and visual identity, and finalization of the prototype with operational languages and digital interface resources already existing in the programming market. **Results:** With the provision of nursing care at home as a topic of knowledge, the researchers built a prototype that connected the various specialties of professional nurses registered on the platform and the need for patient care by age group, comorbidity, number of days of care and cost added to the service provided. They were inserted in the fictitious registration forms of several nursing specialties so that visitors to the fair enter as patients in search of a qualified professional for home care. **Conclusion:** The construction of this work contributes to reinforce the use of digital technology in health and the need for digital platforms that reach trained professionals and facilitate the search by patients for specific needs in home-care context.

**Key words:** Home Care Services; Nurses; Technology.

## ORIGINAL STUDY

# Development of an information website for parents and guardians of children with disabilities: a technological innovation in health for early intervention

*Desenvolvimento de um website informativo para pais e responsáveis de crianças com deficiência: uma inovação tecnológica na saúde para a intervenção precoce*

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## ABSTRACT

**Introduction:** From the suspicion of the first manifestations of delays in the neuropsychomotor development of their children, parents start a trajectory of searching for information about the condition, which can take long periods to be answered. It is noted that the internet has become the largest means of population information, and the search for topics related to health has grown exponentially, at the risk of obtaining incongruous information and without scientific evidence. **Objective:** To describe the construction of a website that will serve as a guide for parents who suspect or who have already received a diagnosis of disability for their child. **Method:** This study presents the development of an informative website, developed by nursing and information systems students with his respective nurse teacher advisor. The steps work was based on the definition of target audience and the creation of nomenclature, design, color palette and content. In addition, a Child Development Milestone Test (TMDI) was available on the website, based on the child's Health Handbook. **Results:** Between November and December 2022, the website had 949 hits and 95 responses to the TMDI. Detailed content was produced in a step-by-step format, on the topics Cerebral Palsy and Autism, encompassing concepts, symptoms and treatments. In addition, the website content alerts to the rights of people with disabilities, with emphasis on health, education, transportation, leisure and financial benefits, including practical tips on how to access programs that guarantee these rights. From the TMDI results, it was possible to identify 11 children with probable developmental delay and 36 with developmental alert. **Conclusion:** The losses and disabilities resulting from developmental delay can be prevented or minimized with early intervention, so it is essential that parents have early access to safe and easy-to-understand information.

**Key words:** Health Technologies; Inventions; Child development; Disabled people; Access to information.

## ORIGINAL STUDY

# Care and female contraception: a look at the practicality of inserting the female condom

*Cuidado e contracepção feminina: um olhar sobre a praticidade da inserção da camisinha feminina*

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## ABSTRACT

**Introduction:** The barriers to the use of sexual protection methods in women influence the increased risk for sexually transmitted infections. **Objective:** To develop a prototype for the insertion of the female condom that facilitates insertion and contributes to improving adherence to use and reduces the risk of unprotected sexual activity. **Method:** This is a descriptive study about a project developed in the integrated work of the nursing course. This study was carried out in two stages: the first stage consisted of a literature review about the practices of the use of the female condom and its adherence and later the development of the prototype that aids in the insertion that facilitates the insertion of the female condom. To create the sketch, the PATH (1990) female condom proposal was used. The authors adapted the PATH model by improving the insertion mechanism, which provided more happiness. **Results:** The prototype was adapted from the PATH model, improving the insertion mechanism. The cylinder device made of flexible polyethylene has a plunger attached to the condom and when inserted into the vaginal canal, when pushing the plunger, the condom moves into the vaginal canal, with its ring remaining in the upper portion of the canal (uterine cervix). It was featured at a science fair. There was great interest from visitors, especially as there was a practical step of inserting the female condom into mannequins, which increased the public's interest in using the prototype. **Conclusion:** This project is innovative and can contribute to improve women's health by preventing sexually transmitted infections. The use of the female condom needs greater practicality in its insertion and the study proposes to facilitate its use; however, to build the prototype, financial support is needed to reduce the final cost.

**Key words:** Female condom; Health technology; Sexually Transmitted Infections; Contraception; Women's Health.

## REVIEW STUDY

# Artificial intelligence as a screening and diagnosis tool in acute ischemic stroke: a systematic review

*A inteligência artificial como ferramenta de triagem e diagnóstico no acidente vascular encefálico isquêmico agudo: uma revisão sistemática*

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## ABSTRACT

**Introduction:** Acute stroke by large vessel occlusion (LVO) is a time-sensitive matter that requires immediate and standardized care. Delay in recognising, diagnosing and treating strokes is still frequent and often results in loss of neurons and high morbidity. In this sense, the use of artificial intelligence (AI) as an imaging software in acute LVO assessment is a promising tool for earlier and more sensitive stroke detection, due to its recognition speed and ability to optimize outcome prediction. **Objective:** To analyze the effectiveness of AI as a fast and efficient imaging tool for triage/diagnosis of LVOs stroke. **Method:** A systematic review, according to PRISMA, of AI studies focused on the diagnosis of acute stroke published in the PubMed and Medline databases (2018-2022), with the terms “artificial intelligence” or “machine learning” and “ischemic stroke”. **Results:** Eight studies using AI variations for detect LVOs stroke were selected. The most common machine learning used in algorithms were random forest learning (RFL) and convolutional neural networks (CNNs). Compared with RFL, CNNs demonstrated higher sensitivity in detecting image features (85% versus 68%) and higher specificity (91% versus 81%). However, AI algorithm performance metrics were not standardized. Reported reasons for algorithm failure include radiological scanning abnormalities, inadequate contrast and very tortuous vessels. **Conclusions:** Despite the favorable data showing high sensitivity and specificity with the use of AI for LVO detection (increasing the efficiency of stroke triage/diagnosis and promoting better patient outcomes), comparisons between different AI models are challenging and errors still exist, with some algorithms missing almost one-third of the findings on imaging output. Therefore, AI should be used as an accessory (and not a substitute) tool to assist physicians in detecting stroke.

**Key words:** Artificial Intelligence; Ischemic Stroke; Machine Learning.

## ORIGINAL STUDY

# Development of a peripheral venous catheter adapted for color vision deficient healthcare professional

*O desenvolvimento de cateter venoso periférico adaptado para profissional de saúde daltônico*

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## ABSTRACT

**Introduction:** Dyschromatopsia is a congenital visual impairment or a result of systemic ocular diseases caused by changes in the cones and photoreceptor cells of the retina, causing a different perception of the colors. Color is a tool widely used in health services to facilitate guidance in the use of resources, as in the case of the peripheral venous catheter (PVC). The identification of this device is facilitated by color and makes the service more agile, since the indicative number of the caliber is found on the back of the package with many other information. However, healthcare professionals with dyschromatopsia cannot quickly identify PVCs by color, representing a barrier to accessibility in the workplace. **Objective:** To develop a PVC prototype adapted for color-blind healthcare professionals, allowing greater agility in health care practice. **Method:** This is a descriptive research, product of an interdisciplinary proposal of the Nursing course, about the development of PVC prototypes in the form of an electronic model using an excellent 3D design software. The creative process was carried out in three stages: data collection to identify the vulnerabilities of the color-blind individual, definition of the design and electronic prototyping. **Results:** Creation of six PVC prototypes in electronic format with insertion of the desired symbology to differentiate between peripheral puncture devices. **Conclusion:** Dyschromatopsia is a neglected disease. The scarcity of scientific works related to tools that reduce the effects of chromatic visual disturbances or adaptable methods for color blindness compensation, despite the rapid technological evolution, was a hindrance in the development of this study. However, it is inferred that this work presents an action in favor of accessibility and innovation in care practices in health services.

**Key words:** Color Vision Defects; Health Personnel; Vascular Access Devices.

## ORIGINAL STUDY

# Pain reduction during chemotherapy infusion in pediatric patients: actions of an electroestimulador

*Desenvolvimento de um eletroestimulador pediátrico para redução da dor na infusão de quimioterápico*

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## ABSTRACT

**Introduction:** Cancer is the disease that most causes disabilities in children and teenagers in Brazil. In recent years, the incidence of the diagnosis has been increasing and with it, the suffering and pain associated with chemotherapy are treated in the same proportion. **Objective:** To present the creation of a prototype of a transcutaneous electrostimulation attached to a helioscope. **Method:** Descriptive study that used three stages in its elaboration in the conceptual model. The first step was based on the literature review on transcutaneous electrical stimulation, dermal transillumination, cancer in pediatric patients, and antineoplastic therapy. The second step involved the development of the prototype itself based on theoretical consolidation, understanding the device's mechanism of action and aspects related to the physiology of pain. The third stage was the evaluation of the prototype, which according to methodological aspects of the construction of a prototype, took place informally, through the evaluation of the electro-stimulator conduction and the functionality of the device created. The activities were carried out by the group members following the skills inherent to each individual, using the community management theory. **Results:** The prototype created had electrical functionality and conduction compatible with those found in the literature, it had the necessary programming for the transduction and amplification of the required electrical signals and an electrical system of the tissue transilluminator, which had tissue transillumination. The product design was playful considering the children and youth audience. **Conclusion:** The development of the prototype encouraged the students participating in the project to experience fields that permeate the science of product development and enhanced the construction of new skills. Prototype promotes analysis of different forms of learning and how they communicate to increase the student's cognitive and creative capacity around what was proposed.

**Key words:** Child; antineoplastics; peripheral catheterization; pain; transcutaneous electrical nerve stimulation.

## SYSTEMATIC REVIEW STUDY

# Checklist for safe delivery as a tool for reducing maternal and neonatal morbimortality

*Lista de verificação para o parto seguro como ferramenta para redução da morbimortalidade materna e neonatal*

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## ABSTRACT

**Introduction:** Reducing maternal and neonatal morbimortality is one of the main goals of health systems and being considered a sensitive indicator of quality. Therefore, tools to reduce maternal morbimortality must be developed, such as the World Health Organization Safe Childbirth Checklist. **Objective:** To identify the achieved outcomes using the safe delivery checklist on maternal and neonatal morbimortality. **Method:** This is a systematic review of the literature at Scielo, Cochrane and Pubmed databases to respond the following question: “the use of the safe delivery checklist by the services improves maternal and neonatal indicators?”. The following descriptors were used: Checklist; World Health Organization; Safe childbirth checklist; Intrapartum care. Papers that did not respond to the central objective of the research were withdrawn, as well as those which were published more than five years ago. **Results:** 17 articles were found, eight in VHL, 4 in Cochrane and 3 in Pubmed. Except for duplications and works that do not cope with the studied subject, 10 studies were maintained. No studies were found in the national scenario that replied to the guiding question. From the evaluated works, half dealt with the analysis of this tool in underdeveloped countries (Sri Lanka, Ethiopia, India and in regions of Africa). The review demonstrated that the application of the list has the potential to reduce maternal and neonatal morbimortality, including for groups of risk, such as pregnant women previously classified as having high obstetric risk for premature newborns. However, some studies indicate the need to review and expand this tool for better use. **Conclusion:** The use of the safe delivery checklist is effective in improving maternal and neonatal indicators and its dissemination should be encouraged in the most diverse scenarios. It is necessary to develop researches that evaluate the use of this tool in the national scenario.

**Key words:** Check list; World Health Organization; Safe childbirth checklist; Intrapartum care.