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Article

Nursing educational intervention in the prevention of complications in health-related situations

Intervención educativa de enfermería en la prevención de complicaciones en situaciones relacionadas al área de salud

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Abstract

A peripheral venous access is the insertion of a catheter to obtain access to the venous circulation for drug administration or fluid therapy, which is

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not exempt from complications, which are preventable. For this reason, an educational intervention on prevention of complications from peripheral venous access was developed at Hospital Básico de Paute, through a quantitative, descriptive, cross-sectional and quasi-experimental study, with a sample of 38 participants, A survey with 12 questions was administered to determine the level of knowledge of biosafety measures in the management of peripheral venous access. The statistical analysis, descriptive by means of absolute and relative frequencies and measures of central tendency in both pretest and posttest, normality test by Shapiro Wilk, t-test for related samples to evaluate the impact of the educational intervention, was carried out using the statistical program Infostat. Of the total number of participants, 86% were women. Statistically significant differences were found (p 0.001) between the pretest and posttest, obtaining a positive impact, which contributes to strengthening knowledge on biosafety measures in peripheral venous access, to prevent complications, improving the quality of care.

Keywords: peripheral venous access, nursing care, prevention of complications.

Resumen

Un acceso venoso periférico es la inserción de catéter para obtener un acceso a la circulación venosa para administración de fármacos o fluidoterapia, por lo cual no está exento de presentar complicaciones las mismas que son prevenibles es por ello que se desarrolló una intervención educativa sobre prevención de complicaciones por acceso venoso periférico, en Hospital Básico de Paute, mediante un estudio cuantitativo, descriptivo, transversal y cuasi- experimental, con una muestra de 38 participantes, a los cuales se les aplicó una encuesta con 12 preguntas para determinar el nivel de conocimiento sobre medidas de bioseguridad en el manejo de acceso venoso periférico, el análisis estadístico, descriptivo mediante frecuencias absolutas, relativas y medidas de tendencia central tanto en el pretest como postest, prueba de normalidad mediante Shapiro Wilk, prueba t para muestras relacionadas para evaluar el impacto de la intervención educativa, se desarrolló mediante el programa estadístico infostat. Del total de los participantes el 86% fueron mujeres, se encontró diferencias estadísticamente significativas (p 0,001) entre el pre y post test, obteniendo un impacto positivo, que contribuye al fortalecimiento del conocimiento, sobre medidas de bioseguridad en acceso venoso periférico, para prevenir complicaciones, mejorando la calidad en la atención.

Palabras clave: Acceso venoso periférico, cuidados enfermería, prevención de complicaciones.

Introduction

Patient care must be clean and safe to avoid nosocomial infections in invasive procedures that include the insertion of peripheral lines.

The use of peripheral venous access in clinical practice is variable, it constitutes a primordial axis in patient recovery, (Bravo et al., 2019). Being a procedure in which the skin is invaded by penetrating a needle until reaching the blood circulation, it is not exempt from complications, ranging from mild to severe that require receiving therapeutic and come to increase expenses and hospital stay, this procedure is managed by nursing staff (Berganza et al., 2017); (Bravo et al., 2019) In Paraná they demonstrate as a risk factor for complications: prolonged hospitalization time, use of antimicrobials and corticosteroids, infusion of solutions, they also recommend: the procedure should be performed by trained personnel, avoiding multiple punctures, constant monitoring of puncture sites and in case of complications make a detailed record, Leal, (2014) In Portugal, complications predominate; phlebitis and infiltration. In Chile phlebitis is considered the main complication, while in Ecuador predominates; hematomas, infiltrations, phlebitis, related to; use of metacarpal veins, inconclusive aseptic technique, the length of stay 3 days (Contreras & Ríos, 2020), (Vergara, 2017, p. 22).

A peripheral venous access, being an invasive method to have access to the blood circulation, must be performed with all the biosecurity measures, considering the evaluation of the clinical condition of each patient (10). To prevent associated complications should be taken into account; conditions of the product; caliber, material, size and length; of the patient: disease, characteristics of the veins, medications to be administered, permanence, catheter insertion technique and its maintenance, therefore it should be: choose adequate caliber, its rotation every 72 hours, fixation with adequate material, avoid multiple punctures, asepsis of the insertion site, Berganza et al, (2017) Such a procedure is the responsibility of the nursing staff from the beginning, its maintenance and removal, it should be taken into account that their actions are aimed at avoiding associated complications (Correa, 2019, p. 32).

Based on the above, the following research questions were formulated: What are the nursing interventions that should be applied in hospitalized patients requiring peripheral venous access to avoid complications and maintain the quality of nursing care? What is the level of knowledge and practice on biosafety measures in the management of peripheral venous access? In health facilities it is common the use of intravenous treatment for this, it is required a peripheral venous access the same that will be destined for the administration of different therapeutics, directly to the bloodstream, for fluid therapy, sampling and exclusively for blood transfusions (Correa, 2019). Nursing care in the hospital environment includes actions related to the insertion, maintenance and removal of peripheral venous accesses, since most hospitalized patients have

one during their hospitalization, in addition to actions such as: constant monitoring, early detection of possible adverse effects and taking necessary measures, for all this it is essential that the professional keeps his knowledge updated and has skills and abilities (Braga et al., 2018, p. 23).

For Cataldi the selection of the catheter is made according to its purpose, with different sizes to be used according to the patient's characteristics and for special situations such as administration of blood components and patients who are going to undergo surgery, the size of the catheter should be smaller than the caliber of the chosen vein. (2021, p. 34)

Causes for complications; Inadequate asepsis since the bacterial flora on the skin is not eliminated, handling without safety measures, lack of monitoring of the insertion site, excessive handling of the equipment, absence of a label indicating the date of permanence, poor fixation and stabilization of the catheter which hinders the assessment of the insertion site, The measures to be taken include the change or definitive withdrawal, in addition to making the professional aware of the importance of proper management, with emphasis on biosafety measures (Capdevila, 2013). The most common complications: extravasation, hematomas, infiltration, phlebitis, being the characterization of symptoms: edema, erythema, localized pain/heat and hardening of the vein, presence of palpable venous cord, sometimes febrile and presence of pus (Urbanetto et al., 2016). The relationship between nursing interventions and scientific evidence is variable due to factors related to the patient, their environment, institution and the knowledge of the professional, which have generated risk factors within health care, so it is necessary to implement standardized interventions that allow the updating of knowledge to bring them to daily practice, improving the quality of care, Oliveira et al., (2019).

The main objective was to develop an educational intervention in nursing aimed at the prevention of complications due to peripheral venous access, in the Basic Hospital of Paute in the province of Azuay, based on this, the following specific objectives were proposed: 1- To characterize the study population according to variables of research interest, 2 - To identify the level of knowledge about biosafety measures that contribute to the prevention of complications due to the use of peripheral venous access that nursing professionals of the study context possess. 3- To apply a nursing educational intervention on the prevention of complications due to peripheral venous access, in the research setting. 4- To evaluate the impact of the educational intervention on the degree of knowledge acquired.

Materials and methods

This is a quantitative descriptive cross-sectional study with a quasi-experimental design (pretest, educational intervention and posttest). For the following study there was a population of 40 nurses, auxiliary nurses and rotating nursing interns of the Hospital Básico de Paute, in the province of Azuay, Ecuador. A non-probabilistic sampling was carried out. The sample consisted of 38, according to the Sierra Bravo formula of 1988, the error (5%) we made in estimating the sample size, based on a confidence level of 99%.

As indicated by Gamboa et al. (2019), the study included nurses with appointments and/or contracted nurses, auxiliary nurses and rotating nursing interns who work at the Hospital Básico de Paute and who wished to participate voluntarily in the research. And, those who presented a disability and were suffering from an illness were excluded. Is the cannulation of a peripheral venous line defined as, Is the cannulation of a peripheral venous line used for, Does the inadequate cannulation of peripheral lines imply the appearance of the following complications? Does peripheral line cannulation involve a set of health risks to the nurse, such as, Is the risk of local infection due to peripheral venous line cannulation due to, To maintain biosafety before placing the peripheral venous line should follow the following order, Is skin disinfection before peripheral venous line cannulation performed in the following manner, What is the correct sequence during peripheral venous line cannulation, For clinical hand washing should the following be taken into account? To discard the catheter needle after cannulation of the peripheral venous line, the following should be taken into account, List in the parentheses the sequence to be followed in ascending order as it corresponds to each premise, Relate as appropriate by writing in the parentheses the letter that corresponds to the device where the contaminated material would be placed. Questionnaire validated by the judgment of 7 experts in 2010 by Mayorca, the scales used for its validation are the following: Crobach's scale: in the 12 items it exceeds 0.65, which proves its validity.

Kuder-Richardson test: 0.7 for knowledge, which is defined as highly reliable. The survey consisted of 12 questions that evaluated knowledge of activities performed before, during and after the procedure, with emphasis on maintaining adequate biosafety standards when cannulating a venous line, which contributes to preventing complications. The following parameters were taken into account in these activities: general knowledge of venous line cannulation, its use, possible risks and complications, hand hygiene (indicated moment, clinical hand washing, use of gloves), skin

disinfection, catheter selection and insertion, and finally, the correct disposal of waste generated during the procedure.

The research was carried out by accessing the sample. First, the respective permissions were requested from the director and nursing management leader of the Hospital de Salud de Paute. Subsequently, the participants were socialized with the purpose of informing them of the objectives of the research, after which the prestest was applied to collect the sociodemographic variables and provide the questionnaire on the knowledge of biosafety measures in peripheral venous line cannulation. The data of each subject, in rows, were determined by means of an identifier code; in no case were names, surnames, ID card numbers or e-mail addresses recorded; therefore, the subjects were not identified.

Results

Of the total of 38 participants: 31 (82%) were women, of which 25 (66%) corresponded to the hospitalization service, 18 (47%) were nursing graduates followed by 11 (29%) nursing assistants, in relation to age 12 (32%) over 36 years followed by 10 between ages 20 to 25, in years of experience 14 (37%) predominated between 0 to 2 years followed by 10 (26%) between 6 to 10 years.

Of the 100% of participants, in the pre-test only 63% (n=14) knew about the health risks involved in venous cannulation, after the training 97% (n=37) were able to identify them, 76% (n=29) in the pre-test identified the risks for venous access and in the post-test 95% (n=36) did so adequately, 63% (n=24) identified the adequate biosafety measures before cannulation of the venous line and in the post test 95% (n=36) identified them, in the pre-test 68% (n=26) knew about skin disinfection and the post test showed that 95% (n=35) , 29% (n=27) knew the correct sequence of venous cannulation in the pre-test, while in the post-test it was 92% (n=35), in the pre-test 76% (n=29) knew about hand washing and in the post-test it was 95% (n=35), in the pre-test 95% (n=35) identified the classification of sharps and in the post-test it was 97% (n=37), In the pre-test only 79% (n=30) knew about the steps to follow once the procedure was finished, after the training 97% (n=37) knew about it, in the pre-test 84% (n=36) classified the waste after the procedure was finished and in the post-test it was evidenced that 100% (n=38). The educational intervention was carried out in 40 hours, with the use of available material and resources, where basic knowledge on peripheral venous access cannulation was addressed, including biosafety measures before, during and after the procedure, as well as the main complications, and the corresponding actions to prevent

and treat them in case of occurrence, emphasizing the importance of continuous monitoring and proper management of peripheral venous access that contributes to the prevention of associated complications. The intervention was developed according to the established norms and based on studies carried out to improve knowledge and guarantee the quality of care.

An analysis of differences was performed using the T-test for related samples, in which statistically significant differences were found (p 0.001) between the pre- and post-test on knowledge of biosafety measures in peripheral venous line cannulation, that is, in the post-intervention test a mean of 1.63 was obtained, which is within the optimal level, since in the pre-test it was 8.97, equivalent to an acceptable level.

Discussion

In the present study it was shown that 82% were women, within the age range over 36 years old, followed by the range 20 to 25 years old, 47% were graduates in nursing, with 66% working in the hospitalization service, with a predominance of 0 to 2 years of experience (37%), followed by the range 6 to 10 years (26%). In the study with title; peripheral venous catheter: phlebitis and patient safety, the nursing staff who participated was mostly female (72%), with a mean age of 33.7 years (Braga et al., 2018). In Brazil a study on nursing care in safe peripheral venous line cannulation in hospitalized elderly, the sample was constituted by nine nursing professionals of female gender of which were; 2 nurses and 7 nursing technicians, ranging in age from 25 to 49years, with work experience from 6 months to 16 years in the service (Rodrigues et al., 2021, p. 4).

According to the study; knowledge and nursing criteria to avoid phlebitis in neonates with peripheral venous catheter, where the population was 17 of which, 64.8% were nursing graduates, general nurses and specialists 17.6% each group, with a predominance of age between 36 years and older (23.5%) followed by 23.5% between 20 and 24 years, knowledge and attitudes on management and complications for peripheral venous access were evaluated. In the study on knowledge about health risks, knowledge improved from 63% in the pre-test to 97% in the post-test, 76% in the pre-test identified the risks for venous access and in the post-test 95% did so adequately, 63% identified the adequate biosafety measures before cannulation of the venous line and 95% in the post-test, 68% in the pre-test knew about skin disinfection and 95% in the post-test, 29% knew the correct sequence of venous cannulation in the pre-test,

while in the post-test, 92% identified the adequate biosafety measures before cannulation of the venous line and 95% in the post-test, 29% knew the correct sequence of venous cannulation in the pre-test, In the pretest 76% knew about hand washing and in the post test 95%, in the pretest 95% identified the classification of sharps and in the post test 97%, in the pretest only 79% knew about the steps to follow once the procedure was finished, after the training it improved to 97%, in the pretest 84% classified the waste after the procedure was finished and in the post test 100% did it.

In Brazil, a study on nursing care in safe peripheral venous access cannulation in hospitalized elderly, defined that safe peripheral venous access cannulation depends on certain characteristics related to the type of patient; however, it determined that the care practices of the professionals are not systematized or standardized, which may contribute to the occurrence of adverse events, therefore, the need for continuing education was seen. On the part of the nursing staff, it was found that the knowledge regarding peripheral venous access complications is good and in some cases is deficient, they do not comply with biosafety standards and peripheral venous access management standards, in addition to the fact that there is no relationship between practice and knowledge, which contributes to the occurrence of complications. The educational intervention carried out in the present study, with the use of available material and resources, addressed basic knowledge about peripheral venous access cannulation, biosafety measures before, during and after the procedure, as well as the main complications and the corresponding actions to prevent and treat them in case of occurrence, emphasizing the importance of continuous monitoring and proper management of peripheral venous access, which contributes to the prevention of associated complications. The intervention was developed according to the established norms and based on studies carried out to improve knowledge and guarantee the quality of care.

In a medical clinic service of a hospital in the central region of Portugal, when conducting the study the researcher made the decision to train the nursing staff in order to obtain good results (Braga et al., 2018). To perform an educational nursing intervention, one must proceed according to the established standards, in addition to taking into account skills to be developed based on the educational training received, which allow minimizing the risks of complications, taking as reference that they are preventable, if the nursing action is done under protocols established from the scientific literature that guarantees the quality of care. This study showed that the educational intervention had a positive impact on the population under study, since the pretest mean was 8.97 and the post-test mean was 1.63, which according to the classification corresponds to an

increase from an acceptable to an optimal level, finding statistically significant differences (p 0.001).

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