PICCPED® MOBILE APPLICATION: PREVENTING ADVERSE EVENTS IN PERIPHERALLY INSERTED CENTRAL CATHETERS IN PEDIATRIC PATIENTS

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<http://piccped.herokuapp.com>

Background and aims: Adverse events (AEs) related to the inadequate **maintenance** of **peripherally inserted central catheter** (PICC) have an impact on the morbidity and mortality of pediatric patients. Therefore, the construction of technologies that have the potential to change this **scenario** is **encouraged**. Thus, the **objective** of this study is to create a mobile application that supports the clinical **reasoning** and decision making of the nurse in the prevention of pediatric PICC-related **AEs**.

Methods: A methodological study characterized as a technological production, constructed by a team of content designers, programmers and graphic designers. The content was created based on current scientific evidence. Problem-Based Learning was used as a referencial framework and the seven steps created by the authors in previous work were used as methodological support, which included: definition of the **object** and verification of the **viability** of the app; elaboration of the theoretical reference of the object of the study; definition of the methodological framework for the creation of the app; drafting the app content; completion of app building process and app registration. 2D technology and flat design were used. **Progressive** Web App (PWA) was utilized as the **development** methodology, which is considered an innovative technology as it allows the app to be used in Android® and IOS® operating systems. PWA programming was used, therefore it is no necessary to download the app online (Play Store® or Apple Store®).

Results: This app aims to promote the professional-user's learning by **simulating** problems similar to those found in their care **practice**, where it is necessary to perform a clinical evaluation and **formulate** a decision-making process. In the initial screen of the app (Figure 1), the user is directed to a screen with a brief introduction of the app and its objective. Next, key definitions are presented. After, figures representing the undesired adverse events are presented, which include - Central Catheter-Related Bloodstream Infection (ICSRC), phlebitis, obstruction, incorrect positioning, thrombosis and catheter rupture, as well as their concepts (Figure 2). The user is directed to a general clinical case of a two-year-old child with a PICC line.

The user is then directed to six specifics options: "placement site assessment", "PICC dressing", "adequate positioning", "permeability **maintenance**", "fluid administration" and "infection prevention". In each case the nurse is encouraged to perform an assessment and decision making, which, when choosing incorrectly, is made aware of the AE that could have affected the patient and is requested to perform a new **evaluation** (Figure 3). When all the correct options are selected, there is an alert congratulating the user and an animation appears demonstrating the correct **technique** (Figure 4).

Conclusions: PiccPed® is **expected** to disseminate knowledge on the PICC line care and assist in the safe care **of** children with PICC lines.

Figure 1 - PiccPed® home screen

Figure 2 - Adverse events

Figure 3 - Screen with the selection of the correct options and representation of incorrect decision making

Figure 4 - Screen presenting the correct decision making and procedure animation