

On-demand system to support patients in home-parenteral nutrition

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Purpose The aging society is challenging for the healthcare system. Particular attention needs to be given to the nutrition of older people. For instance, in 2021, 3,000 people in care homes received Parenteral Nutrition (PN), to be added by approximately 9,000 people with Home Parenteral Nutrition (HPN). PN is life-saving, but the complication rate is significantly higher than in oral and/or enteral nutrition (Gerber, 2020). PN at home is given during the day or at night. During the day, patients are tied to the nutrition fluid (via infusion stand/rucksack) since HPN is typically administered by a nursing service (AWMF Registry No. 073/021). This fact disturbs HPN patients and leads to fewer social activities. As a result, the psychological illness rate is significantly higher (Emanuel, 2022). From a medical point of view, daily nutrition therapy can be interrupted. However, this can pose risks, e.g., if fat residues obstruct the port catheter, which can cause infections and/or metabolic complications (Tempel, 2009). Strict catheter care and sterile work are essential to avoid infections. Patients can self-manage the nutrition fluid if they or their relatives are professionally trained and confident. However, patients often feel overstrained (especially the elderly), although clarification about the dangers and management can help to better understand the conditions (Payen, 2013). To give them more confidence, an on-demand-based solution must be found so that patients can act in a more self-determined way. **Method** A comprehensive literature review on health risks was carried out. Based on this knowledge, two focus group discussions with five participants were conducted to discover new aspects through different contributions from the participants (approach see Figure 1). Five professionals with experience in HPN participated in two focus group discussions. Ethical clearance was granted by the Ethics Committee of the German Society for Nursing Science for this project. The first focus group centered on the current situation, and the second on a vision for the future. The previously documented HPN process was discussed step by step. The discussions were analyzed using the qualitative content analysis approach. In addition, a process analysis has taken place from a technical point of view to tackle the functions of an on-demand system. Both the current status and the vision are the basis for the specification of a digital HPN on-demand support system. **Results and Discussion** This project aims to address the challenges and risks in HPN and to support patients with a situation-based digital system. The group discussions confirmed that patients often feel insecure in self-managing HPN. The issues mentioned affected both, technical as well as process challenges. Technical challenges such as a difficult-to-handle connection system are not the focus of this analysis. Process issues can be categorized into hardware and software aspects during the typical HPN process steps, as well as those arising in exceptional circumstances causing uncertainties. Generally, an on-demand emergency plan is highly advisable. The findings are utilized to develop a user interface design, which should be further tested in the next project phase through the cognitive walkthrough method involving users through a critical evaluation of the user interface to identify potential problems and opportunities for improvement.

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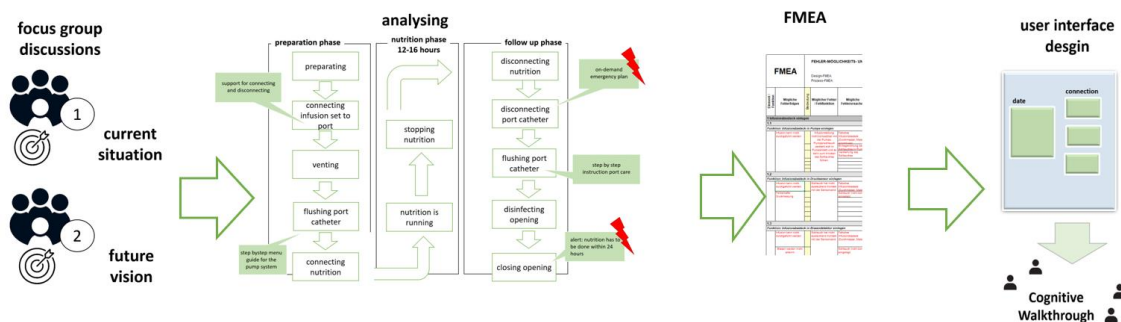


Figure 1. Approach and results of focus group discussions