Designing a prototype medical garment for mothers performing Kangaroo Care on infants in the NICU

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Introduction and Background

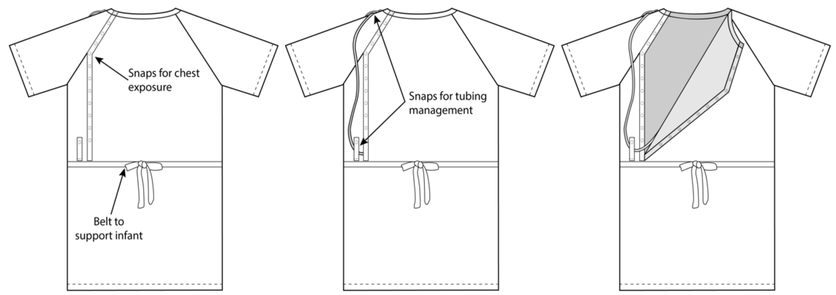
Infants in the NICU Kangaroo care, a method of skin-to-skin contact between a caregiver and an infant, is essential for promoting the physical and emotional well-being of preterm or low-birth-weight infants in the NICU. This practice has been shown to regulate the baby's body temperature, improve oxygen saturation, encourage weight gain and enhance parent-infant bonding. Despite its proven benefits, implementing kangaroo care in the NICU poses challenges due to medical equipment, caregiver comfort, and accessibility (Rao, S. et al.). A specialized medical garment can address these challenges by ensuring safety, functionality, and ease of use, allowing parents to engage in kangaroo care more effectively. (Rao, S. et al.) This project aims to design an innovative garment that supports kangaroo care while accommodating the unique needs of NICU infants and their caregivers.

Methods

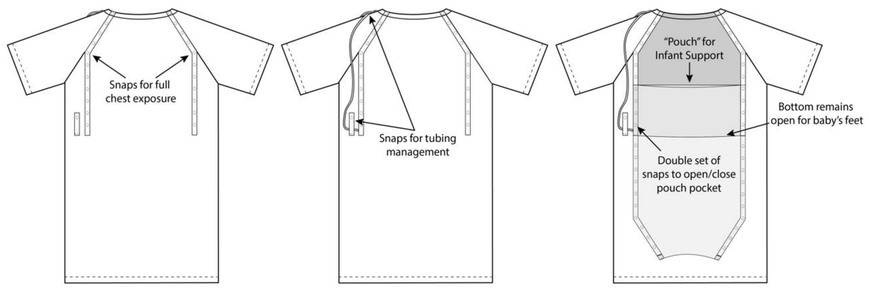
To begin our project, we conducted a comprehensive literature review to gather insights into recent advancements in medical garments and the protocols associated with their use. This review included analyzing peer-reviewed articles, clinical guidelines, and recommendations from reputable organizations such as the World Health Organization (World Health Organization). Our goal was to identify key requirements for a medical garment that would effectively support kangaroo care for NICU infants while ensuring compatibility with the unique challenges of the NICU environment. The literature review focused on material properties, ergonomic designs, and integration with medical devices like monitors and IV lines. Additionally, we considered caregiver feedback and the psychological benefits of skin-to-skin contact to ensure our design aligns with evidence-based practices. With this analysis as our foundation, we have entered the prototype phase, where we aim to construct a garment that addresses all identified needs, prioritizing comfort, functionality, and safety for both infants and caregivers.

Results

Version #1



Version #2



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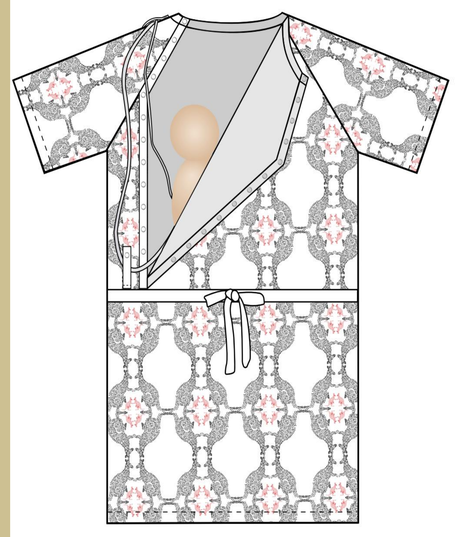

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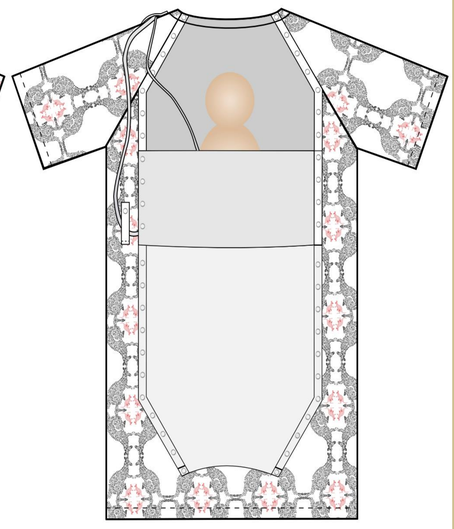

Conclusions

This study investigates how a customized medical garment can guarantee comfort, safety, and functionality while removing obstacles to kangaroo care (KC) in the NICU. Despite the established advantages of KC, including enhanced bonding, oxygen saturation, and thermoregulation, implementation issues persist because of caregiver mobility and medical equipment. Our analysis of the literature reveals a weakness in the current medical clothing: it is not integrated with the requirements of the NICU. Breathability, support, and medical device compatibility are given top priority in our design, which also considers caregiver input for comfort and use. In contrast to previous studies, our method focuses on both psychological and functional advantages. Although our results indicate that a garment can improve KC, adoption is also impacted by structural impediments such as staffing limitations and hospital restrictions. Future research ought to assess actual performance in NICU environments.

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