



Abracito: Designing Skin-to-Skin Incubation Garments for Premies & Micro Premies

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This case study highlights a unique, international collaboration that engages university students in solving a real world problem through functional apparel design. The on-going project is generating student involvement in global citizenry with solutions to reduce infant mortality in Honduras through in country partnerships and Human Centered Design.

Abracito is a collection of cloth wraps designed to promote skin-to-skin incubation practices with critically ill newborns and low birth weight babies born in low resource environments. The project commenced in fall 2017 during a senior-level design studio, continued through independent studies, and is now moving forward into final development through partnership with a Honduran university's fashion design program and local women's sewing collective.

Skin-to-skin incubation uses the natural warmth of the caregiver to regulate the newborn's body temperature and promote synchronicity of breath and heartrate between newborn and mother. The technique can replace electric incubators that are far costlier and that isolate the baby from the caregiver(s). The skin-to-skin incubation technique places emphasis on: 1) properly aligned skin-to-skin contact between the caregiver and the infant, 2) exclusive breast-feeding when possible, and 3) timely (shorter duration) hospital stays. When done properly, skin-to-skin incubation reduces infant mortality and has lasting positive effects on the child's development when compared to more traditional care regimens (Charpak 2017). Proper swaddling with appropriate materials for comforting and warming the newborn are critical. Unfortunately, these materials are often unavailable, and mothers and health care practitioners are typically not well trained in the skin-to-skin incubation method. In overcrowded and under-resourced hospitals, such as our Honduran partner, far too many infants are placed in subpar electric incubators for prolonged hospital stays – thereby contributing to higher mortality among premature newborns.

Using Human Centered Design (HCD), undergraduate industrial design students worked in tandem with a US-based not-for-profit organization and Honduran neonatologists and nurses trained in skin-to-skin incubation care. Most industrial design students have limited knowledge of textiles and apparel design. Therefore, the first three weeks of the semester focused on an introduction to fiber and textile properties and learning basic sewing skills. In week four, students began by researching the needs of NICU premies & micro premies, post-partum

mothers with at-risk infants, current market offerings for baby wearing/carrying, and the Honduran cultural needs. Multiple rounds of ideation then followed through sketching and mockups. Using an online platform, students documented and shared their progress with both Honduran and US partners for invaluable feedback and critique. Each student produced four to five sewn samples before moving into their final prototype. Final presentations and prototypes were shared at the end of the semester in presentations attended by the not-for-profit partner and other interested community members.

Through independent studies during the following spring semester, five selected students further refined their prototypes. These students were challenged to design and establish consistent material usage and construction techniques across all garments. The result was the development of a novel collection of cloth wraps, entitled Abracito, a Spanish term meaning a small hug or embrace, which enhances self-incubation results. The final wrap prototypes were exhibited during NYC Design Week 2018.



While the collection does have commercial potential, the immediate focus is on producing the garments locally in Tegucigalpa and donating to Honduran families in need. Partnerships with the national hospital and a university in Honduras are formalized, and a business model engaging a local women's sewing collective is in development for the production and distribution of the Abracito collection. Current work focuses on developing a training program to improve the capacity of women in Honduras to produce the designs. Through collaboration with an NGO project partner, support is being given for the formation of a micro-enterprise business plan and seed-funding model, including marketing and distributing the product for commercial sale with donation to the caregivers in the hospital's NICU and skin-to-skin-incubation training program. Future scholarship will concentrate on conducting program

Page 2 of 3

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evaluation and research, and creating, or identifying, a platform for globally sharing both training and designs. The full design process ensures the mothers and nurses have both the materials and training necessary to properly wrap and position babies for the skin-to-skin incubation method.

The Abracito collection as a socially relevant, scalable micro-enterprise that will significantly contribute to the improvement of neonatal care for critically ill newborns and promote self-reliance, agency, and self-determination in Honduras.

References

Charpak, Nathalie, Rejean Tessier, Juan G. Ruiz, Jose Tiberio Hernandez, Felipe Uriza, Julieta Villegas, Line Nadeau, et al. 2017. "Twenty-Year Follow-up of Kangaroo Mother Care Versus Traditional Care." *Pediatrics* 139 (1): 1–10. <https://doi.org/10.1542/peds.2016-2063>.